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## Original Contributions.

### A CASE OF ACTINOMYCOSIS.

BY GEORGE ZEDERBAUM, D.D.S., CHARLOTTE, MICH. READ BEFORE  
THE SOUTHWESTERN MICHIGAN DENTAL SOCIETY,  
AT BATTLE CREEK, APRIL 9-10, 1907.

I am here to-day to present to you something out of the ordinary line of dental society meeting routine. In selecting for my subject the description and the treatment of a case of actinomycosis that came into my hands, I wish it understood that I do not for a moment wish to detract from the value of any paper that has been, or will be presented here on the usual topics. But I am cognizant, and you will agree, that at every meeting of any dental society, the predominating papers are on the manner of inserting the various filling materials, on the relative value of all of these, on various means of swaging metal bases and obtaining matrices for inlays and on such technical subjects. These are read and re-read and discussed pro and con until, I am positive, we all have fair ideas as far as such subjects are concerned. Surely a little variety, still keeping within the bounds of a Doctor of Dental Surgery, ought to be of mutual interest. My particular subject is within these very domains and is concerned with the oral surgery branch of our profession, chiefly. In presenting this subject of "Actinomycosis," I wish to show the necessity for every general practitioner of dentistry being familiar with the requirements along the oral surgery line; to show that we all, as such practitioners, must be able to take care of most oral diseases. I also contend that we ought to be in position to make our brother, the general practitioner of medicine, understand that we are not merely skilled mechanics, but that we are skilled professional men as well, and studied anatomy, physiology, bacteriology materia medica, oral surgery, etc., sufficiently to be able to

intelligently care for every case that presents itself, and that is within the legitimate bounds of a dental practitioner, unless it be a case for a major operation when a particular specialist or a consulting surgeon would be desirable.

Now, what is the cause of actinomycosis and what are the usual symptoms, treatment and probable result if a case should be allowed to go without surgical interference? This disease has often been mistaken for osteosarcoma in regions where bones were involved and microscopical examinations were necessary to determine a correct diagnosis. Dr. Bevan, of Rush Medical College, and an authority on this particular subject says: "Clinically, actinomycosis appears under four different forms, from four different routes of infection: 1. Head and neck actinomycosis, with infection from mouth and pharynx. 2. Chest actinomycosis, through the respiratory tract. 3. Abdominal actinomycosis, with infection probably always through the alimentary canal; possibly through the genital tract of the female. 4. Actinomycosis of the skin. The frequency of occurrence of the disease in these various regions is found to be, roughly speaking, about 50 per cent of head and neck actinomycosis, from 15 to 20 per cent of chest cases, from 20 to 25 per cent of abdominal cases, about 2 per cent of skin cases and a small balance where it is difficult to determine the route of infection." We, as dentists, are concerned chiefly with the first division of the above classification, which, you will note, supplies half of the total number of such cases. The common names are "wen" and more often "lumpy-jaw." The glands of the throat are usually swollen to extreme; appetite, naturally, becomes poor, tongue irritated, saliva profuse and a peculiar odor of breath is always noticed. This disease has been observed in horses, in oxen and in man, and is known to be caused by the attack of vegetable parasites known by the name of "actinomyces," or "ray fungus." The parasite gets into some wound or even slight abrasion of the mucosa, and when in the maxillary region of man, usually by way of pyorrheal pockets. The parasite, it is particularly said, has its resting place on barley-straw, and the sharp barley awns are sometimes blamed for causing the preliminary abrasions by which the parasite gains access into sub-mucosal tissues of a herbivorous animal. The ray fungus is also

common in the air, water and soil, and especially as a rust on various grains and grasses; therefore, it is not uncommon to find the typical actinomycosis cases among the farming class. The ravages of this disease, we see, are mostly in connection with the lower jaw bones and the glands of the throat and submaxillary space. These parts become swollen and very hard. In many cases the tongue becomes so large that suffocation is a well-pronounced feature. Finally, the hard glands suppurate and the purulent, earthy-smelling discharge contains sufficient quantity of actinomyces to make it feel quite gritty. We may stain a little of the pus with methylene-blue, or still better by carbolfuchsin or even the Gram method and examine the slide microscopically. The ray or club-shaped rods of the actinomycosis fungus can be readily discovered. These parasites cannot be mistaken. They look like a number of clubs or rods arranged in the form of a star radiating from a common center, and it is from this shape that it is known as the ray-fungus. Potassium iodid and mercury biniodid, and the late Dr. Bevan's treatment with copper sulphate, are among the well-known specifics. The administration of the two first-mentioned drugs has to be done with great care, preferably intermittently, or other systemic disturbances will follow. The disease should be recognized early and specifics administered from the start. Death, when the disease is in the region of the mouth, usually results from starvation or suffocation. Prognosis in most lumpy-jaw cases is favorable if proper treatment and surgical interference are commenced early. In other regions not so favorable and in pyemic forms entirely hopeless.

Recently the following case came under my observation:—Early in September a man, aged 44, and of good physique, was brought in by an old patient for examination and advice. The history of the case was simple: There was considerable swelling at the angle on the right side of the lower jaw, extending anteriorly and inferiorly. No pain at any point after a scrutinizing digital examination of the parts. Within the preceding week, when the trouble was first noticed, the patient had three lower right molars extracted, but swelling did not decrease. The mouth could not be easily opened. The patient complained of lack of appetite, sleeplessness, and difficulty in breathing. Facial color was

bad, circulation poor and lips almost cyanosed. On examining the mouth it was found to be in a very uncleanly condition; extensive pyorrhea present, some pockets quite deep and discharging; odor very fetid. Upper right molar had a putrescent pulp and was beyond crowning. Other teeth fairly good. Patient gave satisfactory history as to health and habits and his occupation as that of a farmer. Family history failed to show any carcinomatous, sarcomatous or tuberculous possibility. Acting upon my advice, the mouth and teeth were cleansed in the best possible manner, and the upper right molar mentioned was extracted, patient taking a general anesthetic. I gave prescription for a 10 per cent solution of iodopetrogen to be used locally three times daily, rubbing it in carefully over the whole affected area; ordered a thick anti-phlogistine compress applied at night and gave glyco-thymoline mouth wash to be used ad libitum. Advised also one ounce of magnesium sulphate and to remain indoors and keep me informed.

On the third day after this first visit, he came again. Swelling had extended to include the submaxillary, superior and inferior carotid and the anterior portion of the subclavian triangles. Induration was pronounced at the hyoid area, emitting a species of wooden sound upon palpation. On digital pressure upon the two of the most dependent points there was tenderness; one directly above and to the right of the hyoid bone, and the other immediately below the right angle of the mandible. Temperature (sub-lingual) 100 degrees, breath still fetid and tongue badly coated and somewhat swollen at the base. Upon further questioning I learned that, prior to the commencement of his present trouble, he had been threshing wheat and doing general harvesting work about the field. There were no additional symptoms present at this second examination. Pus formation was progressing beyond a doubt and flaxseed poultices were ordered from now on, also small oft-repeated doses of calomel.

On the following day, I visited my man at his residence. Temperature 102 degrees. He was very restless during the night, and, as the swelling as also the induration were rapidly getting worse, he had fear of choking to death. I injected ten drops of echafolta into the anterior, the larger of the two pronounced points, and left antikamnia and codein tablets with instruction to take one every two hours; gave echafolta solution for internal



administration and ordered continuation of poultices. Upon returning to the office, I opened my oral surgery text-book and also the American System of Surgery and read over the chapters pertaining to diagnosis and treatment of actinomycosis. In case just described, all the clinical signs were present, and I decided that this was the disease I had to deal with, and that the only verification necessary would be the examination of pus, of which I will speak later.

At 2:30 the next morning, I was called by telephone by patient's daughter, who, in excited tones, said that her father was choking to death and that I must get there at once. Remembering the condition of my patient when I saw him some twelve hours previous, I did not doubt such a possibility; especially so after having on the previous day consulted two veterinaries, who explained that such might be the culmination of a lumpy jaw attack. I hurried to the residence with oral surgery instruments, also chloroform, etc., and when within a few rods of destination met the family physician, who was called simultaneously. I hurriedly explained the situation before we entered and readily saw that this worthy doctor did not approve of a dentist handling such a case. However, I was called and had charge of the case and was not going to back out. The probability was that I knew just about as much about this particular case as he did. The patient was frightened to a great degree, pacing to and fro and groaning. Swelling was more pronounced and the two points before mentioned very tender. The skin over the whole affected area was thrown into the characteristic folds, or *rugæ*, if you please, of actinomycosis. Upon inserting aspirating needle I succeeded in drawing some pus and made several slides. None of these showed the ray fungus. The echafolta solution I injected on previous day had probably excluded these fungi to a great degree. The doctor, however, corroborated my diagnosis, and we decided to work together. We placed the patient on potassium iodid, ten grains, three times daily, gradually increasing to 60 grains per diem, and urged vigorous use of poultices. Within two more days, I opened the most dependent point of the lower swelling and explored the numerous sinuses, reaching with probe to the angle of the jaw. About a pint of most virulent, peculiarly foul-smelling pus was drained. The characteristic

yellowish-gray granules of actinomycosis were present, thus conclusively corroborating our diagnosis. The wound was irrigated with bichlorid solution and lightly packed with iodoform gauze. I made several more slides, and after staining with methylene-blue only one revealed actinomycetes, while all showed the giant cells. Irrigating and dressing were done twice daily for a time and eventually once each day. Wound healed entirely within ten days; in fact, it was a hard matter to prevent it from healing too fast. At the end of ten days patient came to office and I noticed a dormant sinus partially filled with pus immediately below the first opening. I lanced the same and washed out with potassium permanganate solution. This also healed very shortly. Patient returned to work and has been gaining ever since. Induration about the hyoid area persisted for many weeks. Upon digital lateral movement of the bone, a distinct crepital sound was made, somewhat alarming me for a time. Massaging carefully but persistently caused this condition to disappear at the end of several weeks. The patient reported regularly for prophylactic treatment and is now entirely out of danger.

I wish to add here a few words explanatory of my stand relative to my friend, the doctor, who called at my office one day, after the case was well in hand, and very patronizingly assured me that he would not attempt to make me any trouble, but that there was no question in his mind that I, only a D.D.S., had nothing to do with such a case but turn it over to the physician. I argued with him for half an hour or more, explained that I was obliged to take and pass an examination in oral surgery, that the course I took from one of the leading dental schools embodied in its curriculum two years of that branch; that I took State Board examination and had to answer among others, a question on diagnosis and treatment of actinomycosis. But, no, nothing would convince him that I acted within my jurisdiction and within my knowledge. I was determined to prove my point and immediately wrote Dr. A. L. LeGro, then Secretary of the State Board, and, also, to Dr. Oakman, now President of same Board, asking whether I had in any way overstepped my boundary as a D.D.S. in treating this case of actinomycosis. Their replies showed that I not only had a perfect right to take such a case, but that I and every other dental practitioner should know

how to take care of a patient suffering from actinomycosis, both surgically and medicinally. I am sure, gentlemen, that since my friend the doctor has read these letters, he has a better understanding of the relations that should exist between the two professions.

We know, of course, that the field of the dentist and the general practitioner or specialist in medicine often overlap, and this is one of the many illustrations of the fact. We, as dentists, must keep well abreast of the times in the medical and surgical as well as the mechanical science of our profession; and, what is still more important, apply this knowledge to practical use, for then and only then will we be classed among the progressive specialists of medicine.

Oral surgery, then, makes the same demand upon our skill and intelligence as any other branch of our profession. These demands are, however, not excessive or in any way unreasonable, and we, as units, representing a noble branch of medical science, ought to be able to meet them now and always.

DISCUSSION.—*Dr. Oakman:* I know that you have all enjoyed the very interesting paper by Dr. Zederbaum. Actinomycosis is hardly a rare disease, you cannot call it a rare disease. I came here to criticise the doctor and he says "All right, go ahead." There is one thing that stands out more prominently than any other. He speaks of actinomycosis and blemophilia as the same thing. I do not agree with him. It is only since 1878 that there has been very much known about it. It was really discovered in 1845. As a rule a case of actinomycosis does not heal very readily. Then breaks open in another place. But I think that potassium iodid does the business as well as opening it up. Blemophilia is transferred ray fungus. Now, when actinomycosis affects the jaw, you have almost invariably a diseased condition of the bone. Now I would like to ask the doctor if he probed the bone to see if it was diseased.

*Dr. Zederbaum:* Maybe I didn't probe the bone sufficiently, but effected the cure, however.

*Dr. Oakman:* Actinomycosis has been cured without surgical interference. Now you spoke of aspirating the swelling. I cannot see why you aspirated instead of opening it up. Aspirating is done more particularly in the lungs. Dr. Zederbaum should

be congratulated as to the manner in which he handled this case. He knew just where he stood. The only bad part of his paper is that he says to poultice the face. Now you all know better than that. Any time you poultice the face and it does not cause necrosis, the Lord is on your side.

*Dr. Zederbaum*, closing discussion: In attending a dental meeting, I do not come for the purpose of hearing myself talk, but to listen to others. Such visits are post-graduate courses to me, and I listen to all discussions and try to see what I can of all clinics, and give what little I can in return. While I will admit that I recognized the case I described, simply by accident, I assure you that a second case of like nature would be recognized and treated because of the fuller knowledge of it; and I believe that should any of you have such a case, you will certainly congratulate yourselves that you were here today and took that post-graduate course. To what has already been said and brought out in discussion, I can merely add that it is often hard to find a characteristic specimen of ray fungus, as the organism easily undergoes a degenerating process. The treatment of copper sulphate, as outlined by Dr. Bevan and Dr. Post of Rush Medical College, is based on sound theory. Most of you, no doubt, have read that progressive agriculturists have been trying long and faithfully to find an effective but harmless medicinal agent that would exterminate the ray fungus, which is so abundant in air, water, soil, that it attacks fruits, grains and grasses. The copper sulphate, in weak solutions, proved equal to the test, and is now used exclusively for that purpose. The treatment of actinomycosis with copper sulphate is very successful, even in some cases of the abdominal variety, where the older specific proved valueless. I believe the points are well covered. We agree that we cannot send all our unusual cases to specialists. The next thing in line I wish to speak about for a moment, and then I am done, is the necessity of every general dental practitioner equipping himself with a pocket case containing a few instruments, such as I have to show, in order to perform services that may be required of him in the best possible manner. This case, as you see, contains dressing forceps, arterial forceps, aneurism needle, a scalpel, a straight bistoury, also a curved one, and a Senn's curette. The

cost of the complete outfit is very nominal, and every graduate of the Chicago colleges is supplied by Truax, Greene & Co. with one of these so-called Gilmer's Cases, at a liberal discount.

## THE PULP AND ITS PATHOLOGY.

BY RUSSELL W. BUNTING, D.D.S., ANN ARBOR, MICH. READ BEFORE THE SOUTHWESTERN MICHIGAN DENTAL SOCIETY, AT BATTLE CREEK, APRIL 9-10, 1907.

From the pulp and its disturbances arise a large percentage of our cases of dental pathology and, for this reason, I shall take the liberty to recall something of its development and structure and mention a few points in its pathology which I should like to hear discussed.

The pulp of the tooth is the remains of the dentinal papillæ from which the dentin has been developed. Being in the beginning simply a condensation of the connective tissue beneath the enamel organ, it develops on its periphery the long dentin-forming cells, the odontoblasts. These odontoblasts secrete the calcific material which becomes hardened to form the ground substance of the dentin. As the dentin is formed the odontoblasts recede and leave prolongations of themselves in canals forming the dentinal fibrillæ and canal. As this process goes on and the tooth takes definite shape the dentinal papilla below begins to be circumscribed and is finally surrounded by the dentin, the only connection with the connective tissue about being through the apical foramen. When the dentin is fully formed the pulp occupies the space remaining in the interior of the tooth, the odontoblasts become quiescent on the periphery of the pulp with their prolongations running completely through the dentin to the enamel.

The bulk of the pulp is one of the few places in the body where the connective tissue has retained its primitive, embryonic form, showing no disposition to form fibrous or other tissue. It is, therefore, soft and gelatinous with little fibrous tissue in youth.

In the dental papillæ there is beneath the odontoblasts a rich plexus of capillaries which are supplied by several small arteries. As the pulp is formed the arteries decrease in number until there are but one or two vessels entering the apical foramen

which soon after their entrance seem to suffer a decrease in the thickness of their walls. As they grow smaller they almost entirely lose their muscle and the capillaries appear as sinuses lined by a single layer of endothelium. No lymphatics have been demonstrated in the pulp. However, Burchard and others have described sinusoidal spaces lined by endothelium containing but few blood corpuscles, which may have the character of lymphatics. The nerves of the pulp are of two kinds, vasomotor to the walls of the blood vessels and sensory to the periphery of the pulp, where they end in knob-like endings near and between the odontoblasts.

Inasmuch as the pulp is composed of a very low order of connective tissue, containing blood vessels with thin walls and no lymphatics, the reason for the many circulatory and infective disturbances is readily understood. When the pulp is irritated in any way, there follows a hyperemia with an enlargement of the small arteries, veins and capillaries, and if the apical foramen is small, the enlargement of the incoming artery presses upon the outgoing vein preventing the free exit of the blood and producing a passive as well as active hyperemia. This condition results in a high pressure of blood in the vessels of the pulp and, if it continues for some time, there will be diapedesis of the blood constituents through the thin walls of the vessels to the surrounding tissue of the pulp and the inflammation will be inaugurated. This process may go on to complete stasis of the circulation and death of the pulp, which, if there is no infection, results in the dry gangrene of the pulp which we so often see—a simple drying and shriveling of the pulp. However, in any of these stages there is quite likely to be infection. Infection, Miller says, may take place in one of three ways, namely, through the *circulation*, through the *pericementum* and through the *dentin*. We have all seen cases of perfectly sound teeth which, upon being opened, gave forth a vile odor and every indication of putrid gangrene. The source of the organisms could not well be explained except that they came through the blood stream. However, the source of infection through the dentin is by far the most common. Miller says that germs may enter the pulp from a cavity when there is from  $\frac{1}{4}$  to  $\frac{1}{8}$  mm. of dentin completely covering the pulp. Prob-

ably a large number of the mouth germs and germs of decay are capable, upon entrance to the pulp chamber, of producing supuration of the pulp.

This supuration may be of two kinds, *ulceration* and *abscess*. Of the two the former is by far the more common. The *ulceration* usually starts upon the surface below the point of inoculation and progressively destroys and liquefies the pulp. The second and less common form, that of *abscess*, may be seen in definite circumscribed infection usually in one horn of the pulp, which soon spreads by metastasis to form secondary abscesses in various parts of the pulp and eventually destroy it. There may also be an infective inflammation of the pulp in which we have no pus formed, only gases, these particular germs not having the property of liquefying gelatin or of forming pus.

We have then in every case of pulp pathology a variety of possibilities to consider. When the pulp is alive and has a history of pain, we must carefully diagnose the condition whether it be simply an acute hyperemia or whether it has gone on to inflammation or chronic hyperemia. When we test with stimulants and get quick, sharp responses which soon subside we think that the pulp is not in as bad condition as when the response is delayed and of a lancinating, throbbing character, continuing for some time after the application. However, we may often be deceived in our symptomatology by the presence of a secondary deposit of the dentin which the pulp has thrown up to protect itself, or by the presence of calcific bodies in the pulp.

When the pulp is exposed we should carefully consider whether the infection is superficial and may possibly be reached by antiseptics, whether there is an abscess present that may possibly be excised, or whether the infection is so deep seated that the whole pulp should be extirpated. In this great care should be exercised, for all of us who attempt to save pulps make mistakes, and those of us who do not value the life of a pulp probably make an equal number of blunders. The pulp with its defective circulation and absence of lymphatics makes an admirable breeding ground for germs when once they have been planted, so that it behooves us to see that the infection is not too deep to be beyond the reach of our antiseptics if we attempt to cap an infected pulp.



When the pulp is completely dead and we attempt to remove it we have a task that we should approach with caution. There is in a gangrenous pulp enough infective material to infect the whole body. It is, moreover, enclosed in a bony tube with an opening at the distal end, directly communicating with the apical tissue. When we open into this infected pulp with a bur we are at the very outset liable to produce the action of a piston and force the infective material through the apex. Also, in every step of the process, drills, broaches, reamers or what not, are all likely to produce this piston-like action. It therefore seems more feasible to avoid instrumentation at the beginning as much as possible and resort to gentle washing of the material by antiseptic solutions and, if necessary, the sealing of strong antiseptics in the pulp chamber to thoroughly sterilize the contents of the canals before attempting their removal.

Gangrenous pulps lying unremoved or their faulty removal frequently give rise to an infection of the apical tissue and furnish the inception of an apical abscess. The germs present in the pulp or their ptomains probably wander out through the apical foramen and find in the apical tissue a favorable lodgment or place of least resistance. These acting upon the tissue cause its death and resolution. Just why these germs and ptomains should always lodge in the pericemental tissue and not find their way to regions beyond and there elaborate their process is not very clear. We know that the circulation to the pericemental membrane is very rich, there being three distinct sets of arteries supplying it; namely, small arteries given off from the vessels entering the apical foramen to the pulp, small arteries from the alveolus about, and third, those which come down from the periosteum over the alveolus. So that if the circulation were disturbed in the vessels which came from the apical artery, a good collateral circulation should be readily established which should be able to carry off a certain amount of the germs and poisons when they escape from the apical foramen. However, we have all seen many cases of apical inflammation which had the direct history of the presence of a putrid gangrenous pulp for some time; and the apical infection from it appearing simultaneously with the patient's "taking a cold" or other illness which has lowered the body vitality. So that we may infer that the apical tissue normally has a certain

amount of resistance and can conduct away a certain amount of noxious substance; but, if the amount is too great or its own vitality is impaired through general or local causes, it may offer a place of least resistance where the infection from the pulp may gain foothold and elaborate its toxins.

*DISCUSSION.—Dr. N. S. Hoff:* We must study the pathology of the pulp, and know it better, and use more judgment in its conservative treatment. I think we should take time and study the cases carefully, and, if it is possible, save the pulp. We are in too much of a hurry to get things done, and we are inclined to allow a patient to influence us because of the fear that he will have to pay more for a longer or more conservative treatment, or time required to save the pulp.

*Dr. F. H. Essig:* I have always advocated the retaining of the pulp, unless inflamed or in condition that I could not save it; but it has been up-hill work for me, for thousands oppose it. I think the time is coming when more conservative men will save the pulp. I believe that it is necessary to preserve the pulp, if possible. I had a tooth that had started to give me a little pain, and I took an impression of it and made myself a crown, and put the crown on myself, and for sixteen years have never had any trouble with it, and I did not even clean the tooth out. I just treated it with antiseptics, and have had eight others the same way. We have some discouraging things that come up in trying to save the pulp. I worked two weeks to save a filled tooth and just as I got it right in that stage where the tissues had to be lanced, the patient called in another fellow and he extracted it. Those things discourage, but I would go ahead and do the same thing again.

*Dr. Worboys:* In the treatment of the pulp I have found that if a pulp is infected from a cavity in the tooth and that decay extends to the pulp and the tooth is soft, there is no use trying to save the pulp. If you do not remove it within a year you will have an abscess at the end of the root. I do not feel that it is possible to bring a pulp back to a normal condition that has ever been infected from a decay that has gone through to it.

*Dr. F. H. Essig:* I am a little bit disappointed in the discussion. Perhaps I opened up too large a field. I was sorry that

there was not more discussion on the treatment and symptomatology of special cases. I wonder if others have found that the season of the year makes a difference in the success of preserving the pulp? I have found a whole lot of trouble in filling in the spring, as the pulps of the teeth have either died or are weak. Pulps do not stand the strain then. In other times of the year there is no trouble. If we can save the pulp without taking too great chances, it is the best thing to do.

*Dr. C. H. Land:* I have some samples with me, some of which I showed before the Michigan Dental Society in 1887. With what I have accumulated since, I have 110 preserved pulps, that I know are in existence to-day, averaging eighteen, twenty and twenty-one years' of use. These I can produce. At that meeting I called attention to the fact of the necessity of saving teeth in their normal state. But, just as my friend says, when the pulp is infected, you have a very difficult thing to handle. You have no business to place any kind of metal close to the pulp. I presume that I have had more opportunities of removing fine gold fillings from the teeth than any other man in the world. I have removed many dead pulps, taken out gold fillings, and inserted porcelain. Have heard many talk of pulp revitalizing, but have never seen such a case.

*Dr. Bunting,* closing discussion: I wrote the paper as much for my own benefit as for anyone else's. I wanted to know the experience of other dentists; whether pulps can be saved or not, what their experience has been, and what their conclusions were.

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## CASES OF ORAL SURGERY.

BY CHARLES H. OAKMAN, D.D.S., M.D., DETROIT. READ BEFORE THE  
SOUTHWESTERN MICHIGAN DENTAL SOCIETY, AT  
BATTLE CREEK, APRIL 9-10, 1907.

In presenting a paper on oral surgery I will endeavor to speak especially of the things which have come under my personal supervision. In a paper of this kind it will be impossible to state but briefly the most important points in each case.

The removal of impacted lower third molars, of the second or third degree, require careful consideration. If the tooth be invisible, a skiagraph of the parts is a good thing to secure in most

cases. I prefer the use of local anesthetics to be injected slowly into the parts. If the tooth is entirely covered by gum tissue, an incision should be made longitudinally in the gum, exposing the tooth as much as possible, the bone drilled on buccal surface until roots of tooth are well exposed. Drilling should never be done lingually, as paralysis may result if the inferior dental nerve be injured, which I did once in a very severe case, which caused me much anxiety. The same may be caused if the bone be splintered and a piece forced down next to the nerve. Forceps should never be used in these cases until the tooth be loosened and can readily be raised from its bed without any great effort. Murderous attempts have been made to remove these molars with forceps, causing even fracture of the jaw in many cases, and other equally injurious results.

A thin strong blade of an elevator should be passed down between the second and third molars, using the second molar as a fulcrum. Care should be taken not to exert too much force and displace second molar. The distal portion of crown of second molar may be cut, in some cases; I have never found it necessary. In cases of the second and third degrees never but one tooth should be removed at a sitting. The wound should be packed with gauze, and treated antiseptically for several days. Patient supplied with medicine to control after-pains. Application of hot water bag is of great service. Many so-called impacted molars are removed with ease, and can properly be called "pseudo impactions." Where the bone is massive and of a very inorganic nature considerable skill is sometimes required in handling these cases. Many times nothing short of profound anesthesia will suffice. The patient should be brought well under the influence, as there is less damage from shock.

History of a case: Mrs. W., aged 30 years. Had two impacted lower third molars, one of the second and the other of the third degree. She was anxious for the removal of both. I advised but one at a time; she insisted, and against my better judgment I removed both teeth. Chloroform in this case was used, and both teeth removed. For about two weeks the patient suffered from a severe trismus, scarcely the handle of a teaspoon could be forced between teeth, and rectal feeding had to be resorted to. The corner of the mouth was depressed and there

was a partial facial paralysis. Drouling and many other disagreeable features were present. Patient regained her normal condition after several weeks, as her general health improved.

#### DISEASES OF ANTRUM.

*Tumors.*—Malignant tumors often begin in the antrum, such as sarcoma, and a very rapidly growing form of epithelioma.

A sarcoma of upper jaw may at first cause symptoms resembling toothache or neuralgia. Epithelioma may also simulate caries or necrosis; these symptoms should always place the surgeon on his guard. My personal observation regarding the prognosis of cases of malignant growths has been that they terminated by death, after running a period of seven or eight months, unless an *early radical* operation be performed.

In a case of sarcoma the prognosis largely depends on the type of the histologic structure of the tumor. A giant celled sarcoma, if completely removed, seldom recurs. Metastatic growths seldom appear after operation, whereas in round and spindle celled sarcoma, *although* the original growth be apparently removed, secondary growths nearly always reappear. A careful microscopical examination of the tumor should always be made.

History of a case—No. 1: Mr. M., 45 years of age, laboring man, sent to me for examination regarding condition of antrum. Patient complained of pain in the region of antrum, malaise, anorexia, and discharge from nose, etc. Patient showed a marked cachexia. Examination of the external region of antrum showed bulging. The circulation in that region was impaired, and it was evident an operation was necessary. As the teeth were loose, the bicusps and first molar were extracted and a portion of the floor of the antrum removed. It was found to be filled with a new growth, a portion of which was removed and immediately examined. The report stated it to be an epithelioma, the removal of which would necessitate the resection of upper maxilla. This the patient refused to consent to. Found it necessary to remove the cauliflower growth, which grew so rapidly that in ten days to two weeks the orifice of cavity would be occluded. Patient absolutely refusing radical operation, and X-Ray treatment proving futile. On account of the progress of the growth affecting his personal appearance the patient would not venture to appear

on the street, and the case terminated in an agonizing death, four months after its first appearance at office.

Mr. A., merchant, 50 years of age. Complained of a pain to right of median line, just at vestibule of the nose. Two physicians examined him and agreed that there must be some exciting cause at point mentioned. I met the medical men in consultation, but took issue with them on their diagnosis. They agreed to take the brunt of criticism, should I operate, and operation prove a failure. Reluctantly I operated; kept parts packed with iodoform gauze for a week, daily examinations and a few probings. The result was negative, hence there was no relief to patient. A couple of months later he returned and asked me to do for him what I might in order to give him relief. I was firmly of the belief that the antrum was involved. Made an exploratory opening, pus flowed freely. At the hospital next day a radical operation was done. Outer plate of superior maxillary was distended, and on deep palpation the parts cracked like parchment. The case was edentulous. Removed the floor of the antrum with little effort, as the parts were necrotic, the mucous tissue was curetted, and antrum packed with iodoform gauze. In ten days fitted a plate with a protuberance just the size of the orifice of wound. Patient is wearing it with comfort, and has no difficulty in masticating. This case presented a well-defined septum within the antrum. Patient's health was greatly impaired on account of septic absorption. This case was undoubtedly of several years' standing. He is now enjoying good health. It is eighteen months since his operation, and his general health is quite good, although he was never very robust. The distention of the outer plate of both maxillary bones was very marked, so much so that it was a question whether or not it was a bilateral case. It proved, however, to be unilateral.

Mr. R., aged 53 years, occupation capitalist. Called on me for examination of his case. He had spent the year abroad with his wife and family, in the hope of regaining his nervous equilibrium. On his return journey, while in London, he was taken ill with pain in the frontal and maxillary sinuses, on right side, which caused him great suffering. He had been examined by a physician, and dentist, who failed to diagnose his case. He lay in a comatose state for several days; in the course of a week he was

able to be up again, when he took passage on a steamer for home. The second day out he lapsed into a comatose state. Later the ship's surgeon quieted his pain by the use of opiates. After reaching New York he had a tooth extracted; this gave but slight relief. The following day I saw him. I found a copious discharge of pus from the nose. The odor was plainly discernible at speaking distance. His handkerchiefs were saturated with odorous pus.

Using a local anesthetic, I drilled into the tooth socket and secured a liberal flow of pus, found the floor of the antrum necrotic. A few days after a radical operation followed at hospital.

Removed all the teeth, posterior to the cuspid necrotic bone and mucous tissue of the antrum. In ten days' time fitted an appliance attached to a rubber plate. Two teeth were absent on the opposite side, which made the plate more secure.

In two weeks' time he became thoroughly accustomed to his appliance, and he was able to go South for the remainder of the winter. Saw the patient last week on his return home. He is in excellent health and spirits, his recovery being complete.

Mr. R. H., 40 years, a printer by occupation. Was sent by his physician to me for treatment of an aggravated case of pyorrhea; practically all of his teeth were affected, especially the molars and bicuspids on the upper right side. After two treatments for the removal of calcareous deposits from the roots, I explored the buccal sockets of the first molar and found I could easily insert a probe into the antrum. A slight amount of odoriferous pus percolated into the mouth. The next day I concluded to operate on antrum and made a liberal incision over the roots of bicuspids and first molar, the tissue was raised up with periosteotome, and bone drilled the length of the incision, securing an opening big enough to feel with finger. I then curetted the mucous tissue of antrum, irrigated and packed with iodoform gauze, dilating the orifice of wound as much as possible with the gauze, in order to facilitate the insertion of a small electric light and secure a view of the parts at some future time. After a week's irrigation and tamponing, I fitted a vulcanized rubber plug large enough to keep wound open. After a month of daily irrigation of boric acid and sodium bicarbonate solution, I concluded to allow wound to heal, which it did rapidly after scarifying the edges.



First. The *subjective* symptoms were general malaise.

Second. On arising in the morning a bad taste was noticeable.

Third. It was generally noon before the patient would begin to take interest in things without great effort.

Fourth. Experienced no pus coming from the nose.

Fifth. Had occipital and frontal pains. At no time were they severe.

Sixth. Constipation.

Seventh. Loss of the sense of taste.

Eighth. Despondent at times.

*Treatment (Systemic).*—Calomel in fractional doses, A. S. & B. pills, cascara, saline cathartics, castor oil and tonics.

The *interesting* part of this case is the quick return of the sense of taste. Two days after operation he informed me that he could taste his food, stated there was a great change taking place somehow. Coffee no longer seemed the same as water to him. His taste seemed to improve immediately.

Patient became enthusiastic from the fact that his taste, which had been lost for a few years, had been restored to him. The malaise ceased immediately, and his general condition improved in every way. Now when he arises in the morning there is a great difference; he is active, bright and cheerful, and expresses himself that he has taken a new lease of life. I know of no case in the literature where the taste returned as quickly as in this.

*Antral Case.*—Mr. W., aged 29 years. Occupation, cigar-maker. I was called in to operate on the upper left jaw. Diagnosis, empyema of antrum, with necrosis; carious third molar previously extracted on account of pain, allowing pus to come through the tooth sockets.

Bicuspid and first molar were loose and a necrotic condition plainly discernible; loose teeth were extracted, diseased bone and mucous tissue of antrum were curetted, the wound was packed tightly with iodoform gauze to arrest a profuse hemorrhage. After eight days patient returned to his home temporarily; he did well for five days, when he contracted a septic condition of the upper part of left lung, no doubt induced by some of the septic material being inspired into the lung. For a month patient

was in a precarious condition; pus was present in the antrum and continued to menace the patient's health. The antrum was irrigated and packed several times a day. Temperature ran up to  $104\frac{1}{2}$ , pulse 120-140. He had become emaciated. The cavity in lung had become larger, and it seemed for a time that he might not be able to withstand the ordeal.

Echafolta was administered with good results, it regulated the pulse and reduced his temperature. I feared an anesthetic of ether in this case, thinking it would cause a case of pneumonia, so waited for the lung condition to clear up. As it did not and his temperature did not at this time exceed 100 degrees, I had him brought to Detroit for a second operation. On entering hospital temperature was 101, pulse 130. Ten days lapsed and no change had taken place, except a slight drop in temperature from the first day he entered hospital, as the effort of a 100-mile travel and excitement incident to the trip sent it up slightly. His chest was examined several times by a specialist; the pus could not be aspirated on account of the position, scapula and clavicle being in the way. Several examinations were made of the sputum; but no T. B.'s found, concluded to again operate, as it appeared that the septic antrum was still the exciting cause.

Chloroform was administered and operation done as quickly as possible. Second molar, the only tooth present, was extracted, and bone cut out from cuspid to distal end of antrum, and bone removed as far as molar process. Portion of palatal bone also removed and antrum was tightly packed with iodoform gauze. Day after operation, temperature 97, pulse 88, a drop in temperature of 4 degrees, pulse 32.

His appetite was good most of the time and feeding was carried on to the limit. Bowels were carefully watched and tonics administered. The patient has left the hospital, but will need careful attention for some time.

*Tubercular Case.*—M. M., child 9 years of age, was sent by her dentist to me for treatment of a swelling in the region of the first lower right molar, which had been extracted, but the pain and swelling continued, pus had nearly burrowed to the outer surface of neck, so far, indeed, that it was necessary to make an incision in the skin about an inch from the free border of the jaw; a second incision was made on the inside of the

cheek, and a curved dressing forceps passed through, connecting both wounds. Some bone was drilled out and parts curetted and wound packed tightly with iodoform gauze. The pus discharging from this wound had a peculiar caseous appearance, and on examination by the bacteriologist it was found to contain tubercle bacillus. Drainage was kept up for several weeks, when the parts healed. The child's temperature was from 99.2 to 101 and continued so for some weeks; after the wound healed, temperature was normal. It is about two and one-half years, with no recurrence. I thought it would be necessary to remove the cervical glands, but see no occasion for it now.

*Case of Hemorrhage.*—Mr. J. G., aged 40 years, occupation, saloonkeeper. Had been affected with frequent hemorrhages from the gums, which lasted several months. Was confined to his bed about half of the time. He was always a hard drinker, and apparently could not refrain from it. His physician referred the case to me. The hemorrhage was not from the gums alone, but apparently from most of the mucous tissue of the body; bloody stools were frequent. He was of a very plethoric temperament, and had endocarditis, nephritis and luetic taint. Had him come to the office and removed all calculi and other irritants from the teeth, prescribed astringent mouth-washes, chlorid of zinc, tannic acid, alum and other astringents. Nightly, for several weeks, he would lose from one to six ounces of blood, and eventually became very weak. I applied *Suprarenal* gland extract in powder form and secured a good result, which lasted 24 hours. Continued it the next day with fair success as far as hemorrhage was concerned. He had a bad reaction, due to the high blood pressure, induced by the absorption of the *Suprarenal* gland extract. Reduced the amount of powder, but for steady use I had to seek something else. Came across an article written by one of New York's gynecologists, citing an instance where, in a case of endometritis, he had used, with success, Thyroid gland extract to control the hemorrhage. This prompted me to try the Thyroid extract in this case. Started with three tablets a day for three days, and then four a day for four days, then reduced to three daily, occasionally two a day. Ten days after taking these tablets there was no sign of hemorrhage, patient continued to improve slowly; about 8 days from arrest of hemor-

rhage he was able to go downtown although very weak. After his second visit downtown, he was induced to take a few drinks of whisky, and a few more; when he had to be brought home suffering from the effects of this indulgence. I called next day, found him in bed with renewed hemorrhage. Could not account for the change, when he had been doing so well. His wife quietly told me the circumstances. In a few days hemorrhage again ceased to some extent. In the course of a few days he was able to be out again, and made a few trips to business. He again fell by the wayside, which brought on hemorrhage. After a strong admonition not to use alcohol except it be prescribed, which I knew would not be likely, I concluded to stay by the case a little longer, although greatly annoyed by his actions. Several other escapades, and I refused to treat him further, as I learned that he was taking alcohol without my knowledge. It was a question whether hemorrhage, nephritis with its attendant sclerosis, paresis, or endocarditis would be the most important factor in ending his sufferings. As I did not attend him toward the last, I am not familiar with the latter condition. Death occurred four months later from a complication of the above diseases.

*Excision of Lower Jaw.*—Mrs. W., aged 34 years, had necrosis of lower jaw, the etiology of which was probably strepto coccus infection; the gums had been lanced repeatedly, but of no avail. Several external openings were made under chin, but failed to give any permanent relief. When the case came into my hands patient had been sick in bed about six weeks, temperature 101 to 104, and in a very weakened condition; took but a glance to see that the jaw was severely necrotic. Patient's face was greatly distorted. Operated the next day after her arrival at hospital. United the small incisions under chin into one large one, inserted probe along lower border of jaw on either side as far as the ramus. Pus and debris were curetted out in large quantities, the parts irrigated and wound packed with iodoform gauze from one ramus to the other. Post-operative conditions caused considerable anxiety. Next morning patient's eyes were closed, and face was a sight to behold, temperature 103, pulse 160. For three days the patient was in a very serious condition. Three weeks later swelling was reduced, when a second operation was done,

and the lower left jaw from ramus to median line was removed. As it was completely necrotic, the bone was removed from within the mouth and from the wound under the chin, exfoliation was taking place of a large piece of bone on the lingual surface near ramus and forward as far as the bicuspid. On the opposite side the wound inside of mouth was the full length of jaw; it had been kept open for five weeks, trusting that in time there might be an exfoliation. When the wound closed up a large swelling occurred, which involved the neck as far as the clavicle, also the mastoid portion as far back as the middle of the neck. The pus was on the verge of burrowing through the outer surface of the skin. Tried not to open on the surface, but found nothing else would do, so an incision of five inches was made, extending past the lobe of the ear. About two inches of bone removed intact and parts curetted. Nothing left but thin ridge of bone and a few teeth, which may be removed easily. The wound is almost healed.

*Sarcoma*.—Miss B. S., aged 14 years, was sent by her dentist to me for examination and treatment. He had extracted a carious lower right bicuspid, which failed to yield to treatment. There was a considerable swelling, the tumor extending from median line to distal of first molar, about size of small hen's egg. On palpation the tumor was soft and had the appearance of a cyst. Local anesthetic was injected into the mucous tissue, and incision made the length of tumor. Found it very vascular, and the whole thickness of bone was affected until the floor of the mouth was reached. The bone was drilled out and parts curetted. By this time I was satisfied that I had on hand something of a serious nature. Sent tissue to pathologist who pronounced it a spindle cell sarcoma of a very malignant type. After this report, I concluded to do a more radical operation and remove the jaw as far as ramus and to the left of median line.

Her parents became alarmed on hearing it was a cancer, and sought advice from many sources. The consensus of opinion was to operate. The thought of disfigurement was naturally trying to her family, as they had a cousin who had a cancer of the hip joint, which was inoperable, and he was sent to Dr. Cooley, of New York, for the streptococcus and prodigiosus toxin

treatment. His parents were informed he probably would not live six months when he left Detroit. The treatment was given him in New York the greater part of eleven months. He has gained ten pounds and was able to walk without his crutches.

My little patient's family knowing this, thought the same treatment would prove beneficial to her, so she spent several weeks under Dr. Cooley's care. The treatments were at first very severe. She is still taking them, but the time is too short to give any positive results. Dr. Cooley, when he first saw the case, rather favored operation, as Dr. Cooley prefers to employ the toxin treatment in inoperable cases. I am watching the case with deep interest.

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UROTOPIN IN PYORRHEA TREATMENT.—A most interesting case was presented to my notice in my practice on Saturday. I have thought of it a good deal since, and I think it will interest you all. A gentleman, between seventy and seventy-five years of age, of education, an M.D., who graduated many years ago, but who is now and has been for many years engaged in other work in New York City, came to me for some new teeth on account of shrinkage of his gums. On taking out his teeth, he remarked: "You remember that lower plate, doctor, used to have lots of tartar on it?" I said, "Yes, a large portion of it right in front. Where is it?" He said, "I have been taking a medicine for a month or two for a urinary trouble. I am subject to uric acid accumulations and some inflammatory condition of the bladder, but I have noticed since I have been taking this medicine that the incrustation has been gradually disappearing, until now it is entirely gone." I said, "That is interesting; that is what dentists have been looking for for many years; if it will remove tartar from that plate, it will remove it from natural teeth, and tartar we have discovered to be one of the prolific causes of pyorrhea." I asked him what the medicine was, and he said it was urotropin. He told me some of the ingredients. I asked him if it was in the United States Pharmacopœia, and he said, "I have not looked it up, but it is in the German and French Pharmacopœia." I said, "Would it have injurious effects supposing that one was not afflicted with urinary troubles, as you are, in the administration of it?" And he said, "I do not think it would; it is a solvent of those ingredients of which this tartar is mostly made up." Now, gentlemen, it seems to me that this is one of the most important things that I have heard of in this connection, and I think it is worthy the attention of everyone here to investigate and follow up, and if it will do for others what it has certainly done for this gentleman, I think we are nearer a solution of our pyorrhea troubles than we have been at any other time.—B. F. LUCKEY, *Items of Interest*.

## Digests.

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DISEASES OF THE PALATE AND THEIR TREATMENT. By Dr. H. B. Ray. The hard palate is a long plate of bone covered by mucous membrane, and forms the floor of the nose and roof of the mouth. The palatal processes of the superior maxillary bones forming the anterior three-fourths of the hard palate, the remaining one-fourth being formed by the horizontal plate of the palate bones.

The soft palate, or velum pendulum palate, is a movable curtain or septum of soft tissues which is attached to the posterior border of the palatine arch and is continuous with the hard palate.

The diseases of the palate, *per se*, are not very numerous, but it becomes involved in quite a number of diseases affecting primarily or simultaneously other structures which may therefore not improperly be called diseases of the palate.

The condition known as cleft palate, being a deformity rather than a pathological condition, merits only a passing notice in this paper. It is due to abnormal development in either the soft or hard palate, or both, and in extreme cases may extend to the base of the skull, involving the anterior border of the alveolus and the upper lip, complicating with what is termed "harelip." Harelip may exist without cleft in the palate. The treatment of this condition is either surgical or mechanical, and sometimes a combination of both.

The treatment of these cases with obturators and artificial velums is quite as familiar to you as to myself, and I therefore dismiss that part of the management of these cases without further comment, referring you to any standard work on prosthetic dentistry, and briefly call attention to their surgical management.

The best time for the surgical treatment of cleft palate, where the lip is not involved, is between six and ten years of age. Where harelip complicates the cleft, a separate operation, directed specially to that condition, is indicated, and should be done in infancy.

A thorough knowledge of the technic of this operation is of



interest to us as dentists for the reason that many physicians have a holy horror for even a minor surgical operation, and, being able to successfully manage such cases, the dentist can often gain for himself not only gold but glory also. The old operation for harelip consisted in cutting off the mucous membrane, thereby making raw the surfaces of the cleft in the lip, and bringing the denuded surfaces together with sutures and applying an antiseptic dressing. The objection to this operation is the loss of tissue. A more approved technic consists in passing the knife through the lip on each side of the cleft and extending the incision upward so as to go above the apex of the cleft; grasp the apex of the cleft and bring down to a level with the mucous membrane of the lip and close the triangular space above the transfixed mucous surface and apply an antiseptic dressing.

It is sometimes necessary in closing the triangular space to detach the soft tissues from the bone and extend the incision on each side of the triangular space, so as to take the tension off the sutures and the more effectively close the triangle; hemorrhage being controlled by pressure, and tension on the sutures further relieved by extending surgeon's sticking plaster from one cheek across the dressing and attaching to the cheek on the opposite side. The tissues being very vascular, union by first intention is to be expected, after which the operation of uranoplasty, or closing the hard palate, may be effected at a subsequent operation. Lingenbeck's operation consists in making fresh the mucous edges of the fissure and making an incision down to the bone, through the muco-periosteum, and close to the alveolar process, from immediately outside the posterior palatine foramen, extending as far as necessary; raise the soft parts between the incisions from the hard palate, bring them together in the median line, and unite and secure by sutures, controlling hemorrhage by pressure. Sutures should remain five or six days, and the halves of the upper jaw may often be pressed together with strong clamps and the fissure in the hard palate be thus made to unite. This crushing is known as Brophy's operation, and is to be condemned, as it causes deformity in after life.

In cases of cleft of the hard palate, we usually find it complicated with cleft of the soft palate also, or cleft of the soft

palate may exist *per se*. In either event, straphyloraphy, or the operation of closing the cleft in the soft palate, is indicated.

It consists in paring or denuding the edges of the cleft to bring them into apposition; passing silk sutures through the velum, dividing the muscles of the soft palate to prevent contraction of the same from separating the two halves, and thus have the velum at rest; and tying the sutures, which should be from one-fourth to three-sixteenths of an inch apart, being careful not to tie so tightly as to strangle the soft tissues.

The palate is sometimes the seat of malignant growths. Being covered with mucous membrane and a superficial tissue, we naturally look for carcinoma instead of sarcoma.

Either the hard or the soft palate may be involved, and as in other parts of the body, early diagnosis, prompt and thorough removal of the growth is indicated, otherwise a fatal result is but a question of only a comparatively short time.

The prognosis is, at best, rather unfavorable; but if taken early, and removed thoroughly, and the X-ray used to supplement the surgical treatment, some cases remain permanently cured.

In the application of the X-Ray, one word of warning may not be out of place.

It is a known fact that the X-ray has the power of making the hair fall out, and even destroying the hair follicles, so that a return of the hair cannot be expected; and for this reason, in its application about the trunk, neck, or face, a nonconductor must be interposed between the X-ray and the hair, or beard, in case the patient is a man—in other words, isolate the field of operation.

The palate is often affected by simple inflammation, superinduced by taking hot or irritating substances in the mouth, or in masticating food; some unexpected foreign body is encountered, inflicting sufficient traumatism to excite inflammation, and in cases of alveolar abscess from death of the pulp, especially in bicusps and the palatine roots of molars, the palate often participates in the inflammatory process.

In rare cases, antral disease may cause inflammation of the palate. The symptoms are similar to those of inflammation in other parts of the body, modified by the kind of surface involved and the location of the inflammation.

The prognosis is uniformly good. The treatment consists in applying the general principles governing the treatment of all acute inflammation. Put the parts at rest as much as possible by interdicting the use of vocal organs and withholding all solid food, first, because in its mastication pain is necessarily induced and thereby the inflammatory condition likely to be aggravated; and secondly, in treating all acute inflammations, the effects of an antiphlogistic treatment is best secured with a liquid diet.

The regime of the diet must therefore be transformed from foods that are solid and stimulating to those that are liquid, bland and non-irritating.

If we find an elevated temperature, with accelerated pulse rate, the indication is met by the Tr. of aconite root in two to five drop doses every three or four hours until relieved. A saline cathartic should also be given for its revulsive effect. In the first stages holding small pieces of ice in the mouth is effective. With this treatment prompt resolution usually follows; but should the inflammation continue, with increased swelling, free incisions are indicated, as they tend to promptly relieve the engorgement, and to allow the blood vessels to regain their lost tonicity, allow the escape of microorganisms, and thereby hasten resolution.

In case inflammation is secondary to alveolar abscess, the intelligent treatment of the causative condition must first receive attention, such as the removal of the dead pulp, disinfecting, filling canals, etc., when the secondary palatal trouble naturally subsides.

In palatal inflammation as the result of antral diseases, or from pyorrheal infection, the same indication of first removing, if possible, obtains, and then meet symptoms as they arise.

Caries and necrosis of the bones of the palate sometimes exist, causing ulceration of the subjacent soft parts and destruction of more or less of the structures which separate the cavities of the mouth and nose.

These affections are more frequent than tumors, though less dangerous in their consequences. Commencing with inflammation and suppuration of the periosteal tissues, caries and necrosis of bone, with ulceration and fistulous openings in the palate, soon

supervene, and ultimately exfoliation takes place, when an opening of greater or less extent is established.

During the progress of the disease, there is a constant fetid discharge from one or more fistulous openings in the palate, and sometimes from the cavities of the nose, rendering the condition of the unhappy sufferer both loathsome and distressing, and the condition making even life itself almost intolerable, especially when we remember that the condition continues for weeks, months, and sometimes even for years.

The prognosis in these cases, so far as life is concerned, is good, though the condition is often obstinate to treat.

The general principle of removal of the cause, when possible, applies with special emphasis in these cases, for it is useless to say that fistulous openings and ulceration of the palate can never heal so long as dead bone is present. Therefore so soon as death of bone is discovered, its thorough removal is indicated, as the presence of a sequestrum means indefinite prolongation of the case. It is often necessary to enlarge the opening by free incision to gain access to the bony structures, which should be removed with trephines, bone forceps, chisels, and such other instruments as the exigency of the case may demand.

It will be remembered that "caries" is molecular death of bone, and "necrosis" is death en masse; with the former it is possible, in some rare instances, to effect a cure without surgical interference. In any event, sulphuric acid being a solvent for dead bone, its application is worthy of trial injected into the bone diluted sixty per cent.

To overcome the fetid discharges, detergent, antiseptic, disinfectant and astringent washes are indicated.

In a very large per cent of cases of necrosis or caries of the palate bones, the scorbutic, scrofulous, or syphilitic diathesis exists as an underlying cause; hence the intelligent management of these constitutional conditions becomes a necessary part of the treatment.

If scorbutus be diagnosed as a factor in the case, vegetable acids, green vegetable diet, and a change of residence will contribute largely to the cure of the case.

Where scrofula exists, no hope for a cure of the local condi-

tion can be expected until the general condition is improved. The best results in the constitutional treatment of that condition have been secured from the alterative effects of iodid of potassium three times a day after meals, increasing doses to the point of iodism; or possibly from a protracted course of elixir of iodo-bromide of calcium compound in half tablespoonful doses before meals. If the syphilitic diathesis exists, the recognized specifics for that disease are called for. In the form of scorbutus known as purpura hemorrhagica the mineral acids are indicated instead of the vegetable organic acids as indicated in purpura nautica.

On the palate we often see local manifestation, purely symptomatic, of the eruptive fevers, as measles, scarlet fever, small-pox, and even typhoid fever; also tubercular ulceration is seen, and as these conditions are not circumscribed in their symptomatology in any very special degree to the palate, only a part of their local manifestations being seen at this point, their consideration is not justified in a paper of this kind, and for a more thorough consideration of these diseases works on the general practice of medicine should be consulted.

The diseases which are sufficiently localized at this point to demand further consideration are aphthæ, thrush, noma (or cancrumoris), secondary and tertiary syphilitic lesions, and catarrhal inflammation.

Aphthæ consists of small white ulcers, spots, or vesicles on the palate, and most usually is found in children under three years of age, and is generally associated with some febrile affection, which the mother attributes to teething, and therefore the dentist is often consulted in these cases. This condition is often confounded with thrush, in which the spots are smaller and due to the presence of a parasitic fungus characteristic of that disease.

The aphthus vesicle is small, oval or roundish, white or pearl colored, and consists of transparent serous liquid under the elevated epithelium. In a few days the epithelium breaks, the serum escapes, and a small ulcer is formed, more or less painful, with a whitish bottom and usually a red circle of inflammation around it.

Sometimes the vesicles are discrete and scattered; sometimes numerous and confluent. The discrete variety, though painful, is

a mild disease, continuing a few days or a week. It produces only slight constitutional disturbance, though sometimes there is a fever, and always more or less gastric disorders. It may attack adults with diseased teeth and addicted to excessive tobacco-smoking.

The confluent variety is more obstinate and severe, often extending to the fauces and pharynx, and has even been said to extend to the stomach. While it is admitted that the alimentary canal is always disordered in these cases, it is very doubtful if the ulcerated condition ever extends that far, for the reason that if it did we should have gastric ulceration, which is regarded as one of the gravest pathological conditions known to medical science.

The treatment of this condition is rational and satisfactory. Correct the alimentary derangement by the administration of citrate of magnesia, or where there seems to be a torpid liver, with acid vitiated secretions, the conditions are more properly met by the administration of calomel and bicarbonate of soda tablets, each tablet containing from one-eighth to one-fourth of a grain, administered every three or four hours until effect. Locally the chlorate of potash three or four times daily is beneficial as a mouth-wash; one-third of a drachm to an ounce of water. It may also be used internally in from fifteen to thirty grains every twenty-four hours, watching carefully for renal irritation, which is an index pointing to the suspension of the remedy.

In children too young to use the chlorate of potash, a pinch of borate of soda may be put in the mouth three or four times a day with happy results. The above outline will promptly relieve the simple variety, but the confluent may require more heroic measures. It is here that a gargle of nitrate of silver, five grains to the ounce of water, may be expected to give beneficial results. Happily the confluent variety is rarely seen in right young children; but should it occur, and the nitrate of silver be indicated, the ulcers may be touched with the nitrate in the form of the lunar caustic to stimulate the ulceration into healthy action.

In those unfortunate cases extending to the fauces, the tincture of iodine should enter into the treatment. The happiest re-

sults will often follow swabbing the parts with the following formula:

R Tr. Iodin, ten drops.

Glycerin, one-half ounce.

Pinus Canadensis (dark), one-half ounce.

M. Sig. Apply locally twice daily on a swab.

It goes without saying that the dietary should be looked into and carefully regulated.

Thrush is another of the local diseases manifesting itself on the palate. By some writers it has been confounded with aphthæ; others have described both diseases under the more general term "stomatitis." However, modern research has shown that thrush is a distinct disease, being caused by a specific germ, the *oideum albicans*.

The disease is characterized by the presence of diffuse white patches on the palate, throat and mouth. It occurs especially in weak children, but may affect adults suffering with some wasting disease.

It is differentiated from aphthæ by the white patches of thrush being in marked contrast to the vesicles of aphthæ.

The treatment of this condition in many respects is not unlike that of aphthæ, just described. However, it being a parasitic disease, antiseptic and germicidal treatment is indicated; and as these cases are usually seen in patients whose general constitutional condition is below par tonic treatment is also indicated.

Meet the indications with the appropriate remedies and medicines indicated by the peculiar constitutional manifestations in each particular case.

As an antiseptic to be used as a spray in young children, and as a mouth-wash with those who are older, benefit will often follow the use of the following formula:

R Benzoic acid, 3 parts.

Tr. of eucalyptus, 15 parts.

Oil of peppermint, 1 part.

Alcohol, 50 parts.

Saccharin, 2 parts.

M. Sig. Use as a spray three or four times a day.



Should the above fail to give prompt relief, benefit will often follow the use of:

R Hydronaphthol, gr. x.

Glycerin, 1 ounce.

Alcohol, 1 ounce.

Aqua, Dist., 2 ounces.

M. Sig. Use as a wash several times a day.

In this treatment the hydronaphthol is both astringent and germicidal, and prompt and beneficial results usually follow; but if the case remains obstinate, a very small amount of a forty per cent solution of formaldehyde will improve the germicidal effect, and may be added to the above formula without impropriety.

The palate is often the seat of syphilitic affections. Both the secondary and tertiary forms manifest themselves in this region, sooner or later, in almost all cases, especially those that are neglected and do not receive proper treatment in the earlier stages of the disease.

By this statement I would not be understood to imply that secondary syphilitic patches should be prevented from showing themselves on the palate, throat, or mouth by early and proper treatment; on the contrary, it is my most positive conviction that the secondary patches should be allowed to make their appearance as a means of assuring a positive diagnosis. Especially is this course commendable, seeing that the patient has lost nothing so far as his own welfare and general constitution are concerned, and the disease is just as quickly eradicated by waiting for secondary symptoms to show themselves; seeing that it is often impossible in the first stages to make a positive diagnosis, and to treat a patient for two or three years on a mistaken diagnosis, when he never really had syphilis, is certainly criminal, when by waiting for three months, all possibility of error in diagnosis is eliminated.

The palate is sometimes the seat of the initial syphilitic sore; more frequently, when not communicated in the usual way, we are more apt to find the initial sore on the lips than the palate, and therefore we discard chancre from the disease of the palate, though owing to vicious and unspeakable practices it is more common than in former years.

Secondary syphilitic patches do not differ materially in appearance from that of ulcerative stomatitis, perhaps being slightly larger, with edges more clearly defined and not being surrounded by the red ring of acute inflammation seen in ulcerative stomatitis. A positive differential diagnosis can be made by finding a scarlet-like rash on the body, accompanying the ulcers in the mouth, and added to this, in a large majority of cases, the history of chancre three months previous makes the diagnosis complete.

In the treatment of this disease, so far as the local manifestations on the palate are concerned, but little, if anything, can be accomplished by local means. Astringent washes may hasten the healing slightly, and make the impression on the patient that something is being done for him. This indication is as well met by boracic acid, ten grain to the ounce of water, flavored with a few drops of oil of peppermint, used four times a day, as anything else; though some authorities claim strong solutions of nitrate of silver locally to be our sheet anchor.

The real treatment of this condition is to bring the system as promptly under the tonic specific effects of mercury as possible. One of the most approved methods of doing this is by the administration of proto-iodide of mercury pills, one-twelfth of a grain each. Begin with one pill three times a day after each meal and increase one pill each day, so that the second day the patient gets two pills three times a day, or six pills; the third, three pills three times a day, or nine pills, and so on, increasing one each day until slight ptyalism is produced. When this point is reached, it is called the dose of "toleration," one-half of which can be taken indefinitely, and is known as the "tonic dose" of mercury. Under the tonic dose of mercury, the ulcers in the mouth heal promptly, and the eruption fades from the body like mists before the sunlight. This being effected, the quantity of mercury may be materially diminished, though it must be continued indefinitely.

Tertiary syphilitic lesions of the palate are among the most rapidly destructive of all diseases. The most malignant disease is not half so rapidly destructive to tissue, though more dangerous to life. Tertiary syphilitic ulcer will destroy the entire soft palate in only a very few days unless arrested by proper treatment.

Neither is it confined to the soft palate, but the hard palate is often broken through by a rapidly perforating ulcer; and, unless arrested in its rapid progress, the entire palatal partition between

the oral and nasal cavities may be destroyed, making out of the two only one cavity. Apparently not satisfied with this bold destruction of tissue, the bones of the nose may be attacked, and, in fact, no tissue or organ of the body is safe from ravages of tertiary syphilis.

The treatment of this condition, as a rule, is eminently successful. It is only in neglected cases and among those whose environment is unfortunate that this condition is apt to be seen.

In the management of these cases, mercury is not the agent first thought of, but, on the other hand, heroic doses of iodid of potash are our only salvation. Give it with a boldness begotten of a full realization of the gravity of the case in hand. No stereotyped rules on dosing should govern us in the treatment of these cases. We should literally feed it into our patients, trying to produce iodism as rapidly as possible.

The mode of administration is with a saturated solution in water; one part of the iodid being soluble in eighth-tenths of a part of water, it is possible to give large doses of the drug in comparatively small bulk. One ounce of the iodid dissolved in one ounce of water will make one and one-half ounces of the solution, so that seven and one-half min. will equal five grains of the drug. But this is not a saturated solution. Of a saturated solution, one min. will about equal one grain of the drug.

While the dose of iodid of potash is from five grains to one drachm, in these extreme cases as much as one hundred and eighty drops of the saturated solution, or one hundred and eighty grains, has often been given three times a day, after meals, with the effect of promptly arresting the disease.

Noma, or "cancrum oris," sometimes extends to the palate, and therefore merits a passing consideration in this paper.

This disease usually begins on the gums or lip near the upper first molar tooth, and spreads rapidly to all adjacent structures.

It occurs in children living in an unhygienic environment, breathing impure atmosphere, and of a cachectic habit of body. While the disease is believed to be bacterial in origin, no pathogenic germ has yet been proved. It is essentially a distinct form of gangrene, and, as in most other forms of gangrene, the prognosis is unfavorable.

The treatment is removal of all infected tissue with a cautery. An iron heated to the point of redness gives the best result. Tonics and stimulants, with change in the environment, and digestible and nourishing diet are indicated.

The palate is often the seat of tubercular ulceration. It is differentiated from ulcerative stomatitis in its refusing to respond to the recognized treatment for stomatitis, and also by the fact that symptoms and signs of tuberculosis in other parts of the body, usually the lungs or the alimentary canal, present themselves.

The prognosis is unfavorable, and its treatment by the dentist is not to be thought of. The management of such cases, however, is that of the treatment of general tuberculosis, supplemented with a good antiseptic, germicidal wash, and should be the work of the physician and not of the dentist.

Among diseases manifesting themselves on the palate, not infrequently we see marked elongation of the uvula, associated with a general relaxed condition of the entire soft palate. This condition is often a sequela of diphtheria or other acute diseases, and is frequently seen in children of a cachectic habit. It produces a tickling sensation in the throat, with coughing, but with little or no expectoration. In marked cases the muscles of deglutition seem to grasp and pull on the uvula at each effort at swallowing, thus tending to aggravate the condition.

The indications for treatment are simple: Correct any cachexia with appropriate food, tonics and alteratives, and use a good astringent gargle three or four times a day. Nitrate of silver, five grains to the ounce of distilled water, is indicated as a gargle.

In cases of long standing, where the tendency is to swallow the uvula, astringents sometimes fail. In that event it is necessary to remove a part of the uvula by surgical procedure. The technic is simple: Grasp the uvula at apex with a pair of dressing forceps and snip off only a small portion with a pair of curved scissors.

We should be careful not to try to restore the uvula to its normal length at the time of the operation, for the reason that the cicatricial contraction following the operation, together with the restoration of the soft parts to their normal tonicity, would entirely obliterate the uvula, and its function be lost.

In catarrhal conditions of the throat and naso-pharynx, the palate is often affected, especially in the chronic conditions in which the patient has offensive breath and dried inspissated mucus in the naso-pharynx, causing the expectoration of lumps of mucus and the formation of scabs in the nose, especially during the night, the palate and throat often seeming to dry—a dryness which is not akin to thirst and not relieved by drinking water.

This condition is benefited and often permanently cured by first removing all dried mucous accumulations by spraying the nose and throat with a twenty-five per cent solution of peroxid of hydrogen. This enables the patient to thoroughly remove all the accumulations, preparing the parts for the curative application.

After the cleansing, the following formula will be found to give the most pleasing results to the patient and gratifying to the practitioner:

R Chloroform, ʒ i.  
 Oil menth. Pip., ʒ i.  
 Camphor gum, ʒ ij.  
 Oil of eucalyptus, ʒ ss.  
 Alboline qs. ad., ʒ vi.

M. Sig. Use as a spray in nose and throat three times a day immediately following cleansing with peroxid solution.

Where this treatment fails to cure, it will always mitigate the suffering and improve the symptoms.—*Dental Headlight*.

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THE COMMON CAUSES OF NASAL AND NASO-PHARYNGEAL OBSTRUCTION: THEIR SYMPTOMS, AND RELATION TO ORTHODONTIA. By Francis Asley Faught, M.D., D.D.S., Philadelphia, Pa. Much uncertainty exists in the average mind in the dental profession concerning the symptoms, diagnosis, and location of the common obstructions found in the upper respiratory tract. This fact has been repeatedly brought to my notice at society meetings, in conversation, and by reading the reports of the proceedings of societies as they appear in the journals from time to time. This view has been further strengthened by questioning my friends and acquaintances in the dental profession.

That such a lack of definite knowledge is lamentable can not be denied, and that it is a decided hindrance to the performance of the highest service, particularly in the case of children, and in the correction of dental irregularity, is, I think, evident. How can anyone who is unfamiliar with the fundamental facts of these conditions attempt to understand the secondary disturbances and the casual relationship existing between them and oral deformity, and not realizing this relation himself, how can the dental adviser intelligently explain this relation to parents, show their presence

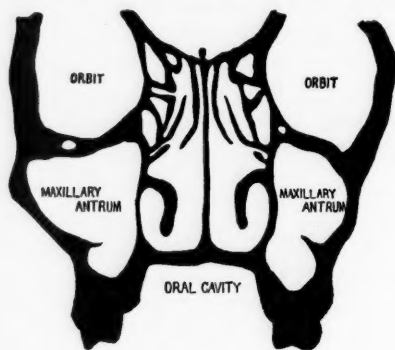


FIG. 1.

and bearing in a given case or argue forcefully for their treatment or removal?

In this age of specialization, where dentistry, a specialty of medicine, possesses within its limits the sub-specialty of orthodontia, it is highly important that this deficiency should be recognized and filled in, possibly by giving the subject of diseases of the upper respiratory tract a position in the curriculum of dental schools, and by including it in the text-books used by dental students.

The obstructive lesions which will be considered in this brief paper are the following: adenoids; hyperplastic rhinitis; hypertrophy of the posterior extremity of the inferior turbinate; deflected septum; nasal polypus and hypertrophied tonsils.

*Adenoids.*—The most common as well as the most important of these conditions is the so-called adenoid disease (Fig. 2). This is the result of a lymphatic hypertrophy of the tissues lining the

pharyngeal vault. The disease is essentially one of childhood, rarely extending beyond puberty as a disease *per se*, but frequently leaving in its train pathologic changes which exist throughout the life of the individual. These secondary changes include diminution in hearing through disturbances in the middle ear, chronic rhinitis, deformities of the chest, the face and of the *dental arches*.

Examination of the naso-pharynx with the rhinoscopic mirror in the presence of adenoids reveals irregular prominences in the

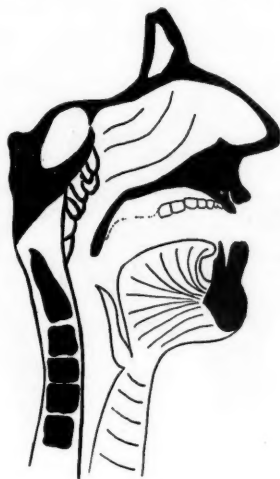


FIG 2.

posterior wall and vault of the pharynx, causing more or less stenosis of the posterior nares. To the palpating finger this mass gives the characteristic "bunch of earth worms" feel. As age advances these become firmer and more resisting through an increase in fibrous tissue, and later become considerably smaller, though they rarely if ever totally disappear.

Children suffering from this disease present a characteristic blank facial expression, and a peculiar dead quality of voice.

By questioning the parent we can usually develop a history of more or less disturbed nasal respiration, producing noisy breathing or snoring at night. There is always some catarrhal discharge, usually with cough, becoming worse in damp weather.



The child is very subject to colds, and is prone to develop attacks of croup and bronchitis on the slightest provocation. Deafness in slight degree is an early and frequent complication, causing apparent inattention, backwardness, and disobedience on the part of the child.

Existence of any one or a combination of the above symptoms should at once arouse suspicion, which should immediately call for a thorough examination of the upper respiratory tract.

*Intra-Nasal Obstruction.*—Interference with proper nasal respiration through the presence of intra-nasal obstruction, while less

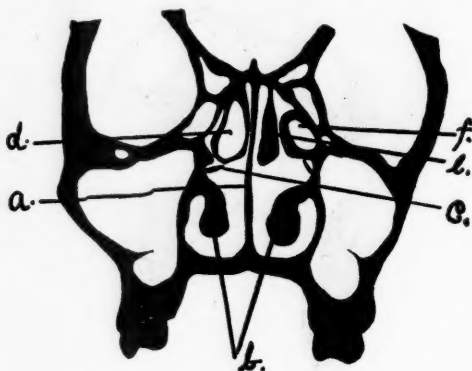


FIG. 3.

common, in children, than adenoids, must not be forgotten, and in the demonstrated absence of adenoids should be carefully sought. Such obstructions produce symptoms very similar to those occurring in adenoids, from which they cannot be differentiated except by direct examination.

These intra-nasal obstructions may be due to a general hyperplasia of the mucous lining of the nose (Fig. 3), causing marked diminution in the respiratory capacity of that organ. In other cases it may be confined chiefly to the mucous lining of some of the accessory cavities of the nose, particularly the ethmoid cells (Fig 3 f), in which case the obstruction will be found in the region of the middle turbinate.

In another class of cases the inferior turbinate in its posterior part presents the chief obstruction (Fig. 4). Differing from the

three preceding, involving the region of the middle turbinate and in rare instances the nasal septum at this point, is polypoid degeneration (polypus), (Fig. 5). This is generally looked upon as a disease of middle and later life, but as numerous cases have been reported in young children this paper would be incomplete without reference to it.

*The Septum.*—Regarding the septum, Cryer and others have shown that a perfectly plain and vertical septum (Fig. 1 a) is

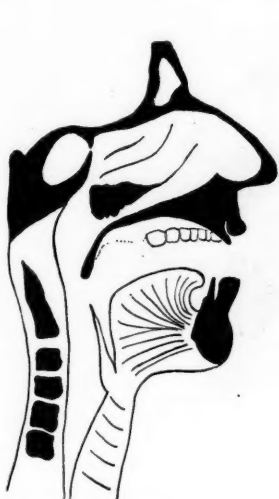


FIG. 4.



FIG. 5.

practically an anatomic impossibility. We must therefore in the examination of the intra-nasal region be satisfied with what we believe to be a physiologically perfect one. One which, as far as functional capacity and the absence of secondary disturbances and symptoms are concerned, is all that can be desired.

Various classifications have been offered to cover all the degrees of irregularity of the septum from a simple curvature in either the vertical or horizontal plane to the extremes of irregularity and crumpling which may follow crushing traumatism. While these arrangements are convenient in the description of cases and in illustration of operations they need not be considered here, as

from the dental standpoint the functional capacity alone is of importance.

Associated with deflection there is more or less thickening in the region of greatest convexity (Fig. 7 a), while upon the concave side nature has endeavored to conserve the functions of the nose by filling it with a compensatory hypertrophy of the inferior turbinate bone (Fig. 7 b). The symptoms arising from this complicated condition are similar to those resulting from adenoids.

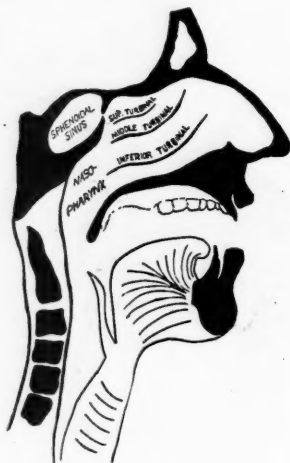


FIG. 6.

The diagnosis rests upon the presence of obstructive symptoms confirmed by intra-nasal examinations.

*Tonsilar Hypertrophy.*—Chronic tonsilar hypertrophy, not only because it is an indication of the probable presence of adenoids in the same subject, but also because it is the cause of very definite disturbances in the shape and conformation of the dental arches, through perverted muscular activities, should always be considered in the pathology of such conditions, and it is well to remember that the removal of adenoids alone when accompanied by tonsilar hypertrophy may fail to attain the desired end, and further, that in the treatment of hypertrophied tonsils the post-nasal space should not be neglected.

*Etiological Factors in Malocclusions.*—Passing now to a consideration of the value of the knowledge of these several conditions, and their relation to the practice of dentistry, more particularly to the specialty of orthodontia, we note throughout all these conditions described the one prominent symptom of obstructed nasal breathing, often resulting in actual mouth-breathing with snoring at night in many cases. Also one cannot fail to note the frequent coincidence of the two conditions, mouth-breathing and dental irregularity. This cannot be called purely accidental when we consider the cause and effect of the altered relation of the tis-

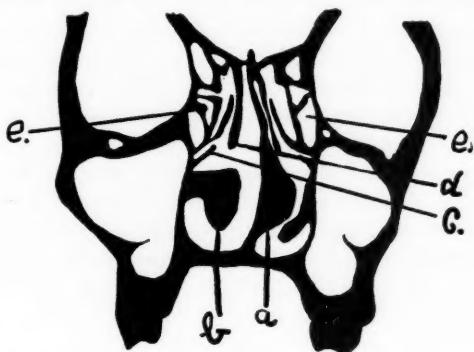


FIG 7.

sues and the jaws and mouth, particularly the unequal forces developed during mouth-breathing, and the mechanical effect upon the jaws and teeth.

To grasp these salient facts is to attain proper realization of the importance and gravity of these diseases. From the dental standpoint, let us go a little more into detail. During quiet normal nasal respiration the muscle forces, in the region of the mouth, are in a state of equilibrium. The teeth are in occlusion, the lips closed and in close relation with the oral teeth, the cheeks rest upon the outer surfaces of the bicuspid and molars, while the tongue is in close contact with and gives support to all the teeth from within.

During mouth-breathing the mandible is depressed, thus increasing the tension of the fasciæ and muscles of the cheeks, the teeth of the two jaws no longer exert a restraining influence over

each other, the lips are parted and the tongue is removed from its normal contact with the teeth. Thus the normal equilibrium is destroyed and in its stead unequal forces are brought to bear on the teeth and dental arches. •

This disturbance comprises an increase in pressure upon the buccal aspects of the teeth with a lack of proper support from within, which causes these teeth to move inward; at the same time, by this movement, pressure is brought to bear upon the oral teeth, causing their movement forward.

These forces even when active over but a part of the twenty-four hours are capable when active through a long period of time of producing decided deformity, the character and extent of which depends upon many factors which vary greatly in each case. Probably the most common results is the so-called "open bite" deformity.

It seems almost superfluous in the light of this evidence to note that treatment should always be directed first toward the obstructive lesion when it exists, and that only when removal of this has been accomplished should active measures directed to the oral deformity be contemplated or put into effect. Neglect of this fact probably accounts for many failures in this class of cases. For even when correction is accomplished in the presence of nasal obstruction, it has been achieved at an unnecessary expenditure of energy, because of the constant antagonism of the perverted muscle forces during the time of active treatment. While after the final removal of all appliances the jaws are still under the original deforming influence which in time may cause a return of the irregularity, the extent of which will depend upon many incompatible factors.—*Items of Interest.*

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THE PRESENT STATUS OF THE PORCELAIN INLAY.  
By J. Q. Bryam, D.D.S., Indianapolis, Ind. There are periods in the history of the dental profession when its thought seems to be turned largely to one subject. We have just passed through the porcelain era, and many of the leading journals have been devoting a large amount of space to porcelain. We now have another outburst of enthusiasm on inlays, but this time the enthusiasm is for the gold instead of the porcelain inlay. After the gold inlay

has run its course we shall be so familiar with the inlay principle of filling teeth that no progressive dentist should plead ignorance of the subject.

While a great deal has been written on porcelain, many of the writers, through a fit of enthusiasm, have made statements which have caused disappointment to those attempting to follow their teachings. It is probable that those gentlemen who advocated porcelain as a filling material for all cavities and who suggested that the gold and amalgam pluggers be discarded, to be used no more but to be kept only as relics of barbarism, are finding some use for these instruments today—for we have learned that porcelain should take its place with other filling materials, and not entirely displace them.

*Need of Thorough Knowledge of Principles and Mastery of Technique.*—Although many of the journals have been filled with articles on porcelain, it is surprising that such a large number of dentists have no knowledge of the inlay principle of filling teeth. And many are discouraging the use of porcelain because they are not familiar with its good qualities. They may have seen a few failures, and because of these failures and their own ignorance, they are condemning it. Such dentists remind one of the laity who condemn modern surgery because they always learn of failures, but never of the many successful operations. There are others who, through inexperience and lack of knowledge of the principles of porcelain work, have made failures—they also are condemning it; for too many dentists have bought porcelain outfits and attempted the construction of porcelain inlays with but little conception of that which they were attempting.

The construction of porcelain inlays requires precision in each step of the operation. The best work can be accomplished only with a thorough knowledge of the principles of inlay work and the properties of porcelain, with mastery of technique, on the part of the operator.

Porcelain inlays have passed the experimental stage, and their use as an esthetic filling must be more universally recognized. The dentist who fails to master the technique of constructing porcelain inlays will be compelled to refer many of his patients to a specialist in this branch of dental art, for porcelain is the material that should be used to fill most cavities in incisors and cuspids.

As the size of cavities in vital incisors and cuspids increases, just in that ratio does the indication for porcelain inlays increase; for if a gold filling is conspicuous at the gingival margin of an incisor or cuspid, an approximo-incisal filling is conspicuous to a much greater degree. While there is a limit to the size of an inlay that may be successfully inserted in an approximo-incisal cavity, there are nevertheless too many crowns adjusted on anterior teeth. The ease with which a crown may be adjusted frequently causes operators to overlook the good qualities of porcelain inlays in many large cavities.

Porcelain makes a desirable filling for those approximo-occlusal cavities where the cavity extends too far beneath the gingival margin and involves a large portion of the occlusal surface. In those cases where it is impracticable to burnish a matrix in the cavity, an impression may be swaged of gold 3-1000 of an inch or platinum 1-500 of an inch. If a heavy material is used for the matrix, there will be less danger of warpage during the process of fusing. The matrix, however, should become a part of the inlay. It should be trimmed close to the margin of the cavity after the final fusing, and after the inlay has been set, the matrix should be finished to the margins of the cavity at a subsequent sitting. This insures a better-fitting inlay, and one the margins of which are less liable to fracture. There is also less liability of the cement being washed away to any marked degree, for the matrix protects the cement in such a manner that a new wash-line does not form at those points where the porcelain may fracture at the margins.

While porcelain has the advantage over gold of giving a filling that more nearly harmonizes with the natural teeth and one that is a non-conductor of thermal and electrical changes, it has still another advantage which should appeal to all conscientious operators, in that imperfect fillings are easily dislodged. A large number of faulty gold fillings which do not preserve the teeth are retained by deep grooves, so that it is almost impossible to dislodge them, thereby deceiving the patient, and many times the dentist. If the porcelain filling is faulty it is dislodged, and the patient knows immediately that the services of a dentist are required.

*Cavity Preparation.*—It is essential that beginners should understand cavity preparation for inlay work. It is not uncommon for



dentists to construct inlays for patients before they have studied the principles of cavity formation. It is not difficult to change the method of cavity formation, even though one has been preparing cavities for gold and amalgam for a long time, if the principles of retention for the different fillings are thoroughly understood.

The preparation of many cavities requires the sacrifice of sound tooth-structure in order to secure the necessary retentive resistance, to prevent frail margins of porcelain, and to obtain proper color. The writer has found in many instances that more sound tooth-structure is involved in the preparation of the cavity for porcelain inlay than would be involved in preparing the cavity for gold. Most porcelain workers are agreed that the cavities should be so prepared that the inlay receives as much retentive resistance as it is possible to give it. Absolute angles, both on the margins and in the cavity, are to be avoided. The cavities should be so prepared that all frail enamel is removed. It should be borne in mind that porcelain is a friable material; this fact is often overlooked, for too often we are careless in our cavity preparation; weak margins of porcelain are formed, which cause the filling to be imperfect, and all the blame is attributed to the material used and not to the method applied.

*Matrices—Material and Manipulation.*—The selection of material for matrices is partially dependent upon the kind of porcelain to be used and the personal equation of the operator. The writer uses gold for the construction of some matrices for low-fusing porcelain, but he believes platinum to be preferable in most cases. The elasticity of the platinum tends to prevent the distortion of the matrices in the withdrawal from many cavities, and because of the pliability of gold, the matrix will not always retain its original shape in the withdrawal.

The technique of burnishing a matrix is dependent upon the material. If thin gold is used, it should be worked to place with cotton or spunk, and very little burnishing with steel instruments should be done. If platinum or gold or platinum is used, most of the burnishing may be done with steel instruments. A piece of foil, large enough to cover the cavity and to be held in position with the thumb and first finger, should be placed over the cavity. Use a ball burnisher as large as the cavity will permit, and work

the matrix into the seat of the cavity. After the matrix has been roughly burnished with the large ball burnisher, select a smaller one and continue the work. Then place a small amount of hard wax or camphor in the matrix and swage it into the cavity. With a piece of tape or rubber dam, turn the matrix over the margin of the cavity. Remove the matrix and trim off the surplus foil, leaving enough material to cover the tooth and to give its contour. Anneal the platinum in the furnace, re-insert the matrix, and re-swage it by filling with camphor or hard wax; then swage it again with tape. If care be taken to conform the metal to the tooth before the final swaging is attempted, an accurately fitting matrix will be formed.

*Carrying the Mental Impression of Tooth-Form.*—Cavity preparation may be thoroughly understood, the technique of matrix formation may be perfected, but until one can carry tooth-form in the mind's eye, one cannot construct inlays in the most artistic manner. Many operators can insert gold and amalgam fillings in such a manner that the lost tooth-structure is replaced with proper contour, but when they attempt to fill a matrix with porcelain the eye and hand do not work in unison, which results in an ill-contoured filling. One requisite of a skilful porcelain worker is the faculty of looking at a matrix and carrying the form of the lost portion of the tooth in the eye. To those who are unable to create a proper mental impression of the tooth-form, I would suggest a thorough course in tooth-carving as being of great assistance. Form cubes or rods of porcelain by mixing the porcelain to a creamy paste with water, and pouring into a matrix made of blotting paper. Then with proper carving instruments, carve a tooth from the block of porcelain. Another requisite of a skilful porcelain worker is dexterity in handling the matrix and the instruments. Many operators handle matrices as though it were impossible to change their shape. Until one has become skilful in manipulating the matrix after it has been properly formed, one may expect ill-fitting inlays. The matrix should be so protected and the fingers so guarded that all carving may be done in the matrix without distorting it.

Every porcelain worker is asked, what porcelain do you use? To such questions the writer usually replies by stating that he uses

any of them. It makes little difference which porcelain one uses—but one should learn to use porcelain. The difficulty with many beginners is their unwillingness to devote the time to the experimental work which is required to obtain a thorough knowledge of the properties of porcelain. The general principles of manipulating all porcelains are the same. They may be mixed with alcohol, but this destroys their power to be molded and carved. Likewise all porcelains may be mixed with water, and this method insures the possibility of molding and carving.

*Composition of Porcelain.*—In order to understand better the properties of porcelain it is necessary to consider the ingredients of which it is composed. Such a consideration shows porcelain to be made up of three classes of substances: (1) Three basal ingredients—silica, the oxid of silicon, kaolin, the silicate of aluminum, and feldspar, the double silicate of aluminum and potassium—which are very refractory substances; (2) fusible substances known as fluxes, which fuse at a lower temperature and which by combining with the basal ingredients increase the fusibility of these refractory substances, and (3) metals or their oxids, which are used as pigments, and which by combining with the porcelain under intense heat produce the various colors.

Silica and kaolin when heated separately withstand intense heat without undergoing any perceptible change. Feldspar undergoes liquefaction when subjected to a high degree of heat. When feldspar is added to silica and kaolin, the mass undergoes a chemical change which under intense heat causes it to vitrify. The materials commonly used as fluxes to increase the fusibility of porcelain are sodium and potassium carbonate, or some material containing some other salts of sodium or potassium. When any of these materials are added to the basal ingredients, the fusibility of the mass is increased in ratio to the amount of flux added.

It was my good fortune to carry on a line of experiments on the fusing of different porcelains. After making over three thousand experiments, the following deductions were made:

- (1) Porcelain has no definite fusing-point.
- (2) By prolonging the time of exposure to heat, a thoroughly fused porcelain may be obtained at a comparatively low temperature.

(3) That porcelain fused at a low temperature for a long time will maintain its characteristic color.

(4) That low-fusing porcelains may be made of high-fusing porcelains by repeated fusings and grindings, but the properties are changed.

(5) If a piece of porcelain be thoroughly fused, then heated repeatedly to the maximum fusing-point, it becomes over-fused.

(6) That porcelains containing a large percentage of flux are more easily affected by bubbles than those that are more nearly composed of the basal ingredients, and that they should be heated more slowly.

Although all porcelains have properties in common there are, however, certain properties that characterize each manufacturer's product. It is important that these characteristic properties be thoroughly understood in order to obtain the best results.

*Color.*—The power to obtain proper colors in the construction of inlays is a gift that cannot be easily imparted to others. This faculty can be acquired by a thorough knowledge of the principles of color formation and an eye trained to detect the delicate shading of colors in both the natural teeth and in porcelain.

One of the prevalent theories of color formation from pigments, known to artists and colorists, treats red, yellow, and blue as primary colors. According to this theory the many colors used by artists and colorists are produced from these three. When two of the primary colors are combined secondary colors are produced. Red and yellow, for instance, give orange; red and blue give violet, and blue and yellow give green. The excessive predominance of one color over another yields the hue to that color.

By combining the three primary colors so that complete absorption of light takes place, black is formed. The colors produced by the combination of the three primaries are termed tertiary colors. The third primary color, however, does not produce a new hue, but merely saddens the other two by forming a certain amount of gray or black in the combination. They are often called the dulled or broken tones of the primaries and secondaries.

Colors have three qualities, known as hue, purity, and luminosity. The excessive predominance of one color over another yields the hue to that color, and the greater the predominance the

stronger will be the hue, *e. g.* when blue and yellow are mixed green is produced; if yellow predominates, the green will have a yellowish hue. The purity of a color is its lack of mixture of white or black or of any color. These admixtures not only weaken the color, but also change its character. This can be shown by adding a white porcelain to a yellow—the yellow is not only diluted, but tends to take a hue. The luminosity of a color is measured by the amount of light reflected to the eye, and is therefore independent of hue or purity. The most luminous color is yellow, while the least luminous is violet; and between these extremes are all the intermediate degrees of brightness. Those teeth wherein yellow and blue predominate appear more translucent because they reflect or transmit the rays; while those in which gray and brown predominate have a somewhat dull appearance, because their power of reflection and transmission of light is not so great, for more of the rays are absorbed on the surface.

In order to become familiar with some of the phenomena of color formation, and to train the eye to detect the hues of colors, the writer finds it both pleasant and profitable to experiment with water and oil-colors and porcelain. An outfit of water or oil-colors containing the three primary colors is used. The secondary and tertiary colors with their various hues are produced.

Every porcelain worker should have the colors in porcelain that approximate the three primary colors and study the formation of colors as applied to porcelain art. While it is impossible to procure pure red, yellow, and blue porcelains, it is possible, however, to obtain colors which when mixed in varying proportions will show the color formation in porcelain. I have found a special red and blue porcelain manufactured by the S. S. White Dental Mfg. Co., and a yellow by Mr. Robert Brewster, to meet the requirements for this work best of any of the porcelains in my possession.

*Cement in Relation to Color.*—That the cement is a factor in the inlay problem is shown by the variation of color so often noticeable when the inlay is set. The inlay may be a good match when the incidence of light is at such an angle as will permit its transmission. But when the angle of incidence is changed, the color of the inlay may change. This phenomenon is caused by the cement—which is an opaque body—excluding the light from

the dentin, absorbing certain rays, and reflecting others. And it is the reflected rays that change the color of the inlays.

For small inlays constructed of a monochromatic porcelain, a cement which is of the same color as the porcelain but of a lighter hue is best; for the rays that are transmitted through the porcelain are not absorbed by the cement, but reflected to the surface, with practically no change of color other than that due to intensification. I believe a pure white cement would be the best for setting large approximal and all approximo-incisal inlays constructed of multi-colored porcelain, because white bodies do not absorb light, but reflect it. The same rays that are transmitted to the cement would then be reflected to the surface.

*Fusing.*—The color of the inlay is many times affected by over-fusing the porcelain. It is a fact that over-fused porcelain becomes lighter, and tends to take a glass-like appearance. If porcelain remains in contact with the maximum heat long enough, or if it is brought to the maximum-fusing heat by repeated fusing, it tends to form a glass-like mass. All the hues of a color, from the normal to a light one, may be made from the same porcelain by increasing the heat above its maximum fusing-point—but this is done at the sacrifice of its strength. In applying the enamels over the foundation, each layer should be fused only to a high biscuit, heating the enamels to the point of glazing only at the final fusing. This prevents over-fusing the first layers.

I wish to condemn the method of fusing porcelain at its maximum temperature for a short time. It makes the porcelain more brittle, and causes the formation of minute bubbles throughout the mass. I also wish to protest against placing the porcelain in an intensely hot furnace, for it causes a crust to be formed on the surface, which prevents the escape of gas. This gas will seek the point of least resistance, which will be along the margin, and result in the formation of bubbles along the margin of the inlay.

If porcelain art is to maintain the high place in the dental art that its advocates are claiming for it, it must be treated as an art. And those who practice this art should acquire a thorough knowledge of the subject, in order that this knowledge may be placed in proper action.—*Dental Cosmos*.

CEMENTS. By Dr. Joseph Loran Pease. Some one has cleverly referred to the fact that as dentists we are like little insects living on the outer rim of a great driving wheel and building their own little windmills instead of using the forces of that wheel. We use too many individual methods, and do not often draw upon that wonderful reserve storehouse which the last fifty years of dentistry has built. If this small gathering were collectively kept together in principle and practice, it would be the means of producing a much needed revolution in dentistry. A better condition would result both for the public and profession. "United you stand today and divided you fall tomorrow." In the preparation of this paper it is not the purpose to introduce anything new, but rather to place stress upon the best methods to be followed in the use of that very commonplace article we all use many times each day—cement. In other words, to turn the leaves of history pertaining to its early manufacture and composition; to glance through the advertising leaflets from the cement manufacturers (usually too soon consigned to the waste basket), to quote from the American textbooks on the subject; to give you extracts from private letters received from a few practitioners with whom I have corresponded, and to quote others who have kindly furnished the essayist with information.

The recent earthquake has taught us that in the construction of our public buildings and places of business, there is virtue in reinforced concrete. Is the hint not sufficient for us to realize that if we wish *our* architectural monuments to stand, we must use cement not carelessly, but well, recognizing its faults and applauding its virtues? The porcelain and gold inlays, the recent moldable porcelain, and the placing of fixed abutments have demanded progress toward the use of better cements and a greater knowledge of the virtues and individual working qualities of cements generally.

Eclecticism in practice should govern the selection of a cement for a given case. No one cement we now possess fills all the requirements in all cases. To intelligently judge which is best indicated in a given case, to become skilled in the use of each of them, and to discriminate against the inferior products, has tempted the essayist to prepare this paper for your discussion.



*Zinc Oxyphosphates.*—Regarding the early history of oxyphosphate of zinc cements, I will quote Dr. W. V-B. Ames. "In a recent journey through Germany, I was able to satisfy myself on the history of the earliest introduction of oxyphosphate of zinc into dental procedures, this being a matter which has puzzled me much since I first became especially interested in this direction. This I incidentally happened to accomplish while at Amsterdam, through the courtesies shown me by Dr. J. E. Grevers, in whose very complete library I found, I have no doubt, the earliest references to oxyphosphate of zinc, through which I was able to satisfy myself as to the identity of 'Rostaing' whose name has been much conjured with in cement literature and advertising. From a small pamphlet, which was really an advertising booklet, dated 1859, I find that one A. Rostaing, signing himself as of Philadelphia, recounts that some years previous to the issuing of the pamphlet, he severed connection with the Medical College of Ohio at Cincinnati to take up his residence at Dresden, which I gather was going back to "Faderland."

It is stated that in 1856, his son, in conducting some experiments in efforts to produce certain enamels (ceramic?) a certain marble-like cement was produced, the use of which for filling carious teeth was suggested. Little more is given as to the nature of the material. An advertisement in the *British Journal of Dental Science* of 1861 reads as follows—"Rostaing's Unalterable and Non-poisonous Marble Cement for Filling and Restoring Decayed Teeth. One guinea and six guineas, etc." The price of one guinea and six guineas per package was presumably for one color and assorted color packages, at which price his adventure should have been quite remunerative. References to his material some years later, when it was yet the only oxyphosphate obtainable, indicate that it had been sparingly used by a small number only and by that writer presumably on account of what was considered an unreasonable cost.

In 1878, when the Rostaing material seems yet to have been the only oxyphosphate in use, one C. Sauer reports analyses of it which indicate that it was essentially an oxyphosphate of zinc, so that it seems that to the Rostaing family belongs the credit of introducing oxyphosphate of zinc some little time prior to 1859. It is, as I have said, a satisfaction, personally, to know definitely of this.

*Hydraulic Oxyphosphates.*—Hydraulic oxyphosphates were first introduced by the English manufacturers, but as the more desirable qualities were sacrificed for the hydraulic property, it was left to the inventive genius of the American to perfect cements of a more happy medium in which combined a sufficiently slow setting quality, good plasticity, density, edge strength, and proper submarine qualities. The proper hydraulic cement is one which will behave properly when subjected to moisture at a stage of the procedure in the usual operation, at which the operator need no longer be concerned about dryness. For instance, the cement be mixed to a proper consistency for filling, the setting qualities will give sufficient time for insertion and rough shaping, when it will be better for being subjected immediately to moisture, the final shaping and finishing being accomplished later when the mass has taken on a decided crispness. In setting a crown, bridge or inlay with the same materials, there need be no care exercised to protect the region from moisture after the crown, for instance, has been carried to place and the surplus allowed to remain in position undisturbed. This surplus will soon become crisp under moisture, when it will come away in a cleanly manner in a few pieces. But in the use of such cements, the manufacturers admonish the operator not to desiccate the teeth preparatory to the placing of inlays, or crowns with live pulps. If the rubber dam is used, avoid long continued desiccation. Have the tooth as near normal as possible with the cavity surface free from moisture. In the setting of hydraulic cement, they take up water of crystallization, and it is claimed by the manufacturers, are therefore impervious to other fluids.

*Copper Oxyphosphate.*—This material was first introduced in 1891 by W. V-B. Ames of Chicago, and has gained in popularity because of its preservative qualities. "In the early tests of oxyphosphate of copper, in the practice of the originator it was found that the working and embalming properties were such that cavity preparation could be much slighted with the result of semi-decalcified dentin being changed into a very dense and sterile substance. Also that wholly decalcified organic matrix when present as the only remaining covering for a pulp, would be transformed into an ideal capping. It will be tolerated and have a salutary effect upon

normal or reasonably healthy pulp tissue. In addition to its germicidal properties it has great density, strength and adhesiveness, making it the most valuable plastic for filling many posterior teeth, and setting many crowns, bridges and regulating appliances." Regarding its virtues as an adjunct to capping, I believe it ideal, but would not suggest it as a means of getting around a perfect cavity preparation. (I refer to the thorough removal of all decalcified tooth structure.)

In a recent letter from W. V-B. Ames, he states: "The first oxyphosphate of copper—(Ames) was an oxyphosphate of copper, pure and simple. Because of a peculiar and tedious manipulation being required with this, it was not as generally adopted or as successfully used as it deserved. To simplify its use, the powder was modified to allow of the mixing being made in the ordinary way, and the use of a liquid similar to those used for oxyphosphate of zinc. This I called New Process Oxyphosphate of Copper, and then named the first article 'Original.' In the course of time I concluded that in building the New Process, I had gotten farther from the ultra-embalming properties of the Original than pleased me for all purposes, and had made also a too quick setter for many people, so I was moved to get between the two with what I called No. 3, for want of a better name. With these three, many conditions can be met, the Original being best for embalming of a layer of leathery decalcified tissue immediately over a pulp, the New Process being best for occlusal surfaces getting much stress of mastication, and the No. 3 for fillings extending to or below the gum margin, and for setting crowns upon posterior upper or any lower root."

*Silicious Oxyphosphates.*—For the last ten years there has been much effort to utilize the cement-making phenomena developed when phosphoric acid solutions and calcium-aluminum silicon combinations are intermixed.

About 1895 a preparation called Dentos was vaunted by a leading manufacturing house as the long-looked-for, indestructible plastic filling material. Fillings were made of this preparation which withstood the oral secretions and attrition admirably, only to be failures from decay all about the mass, because of shrinkage not perceptible till made evident by decay of the cavity wall. For this

reason the material soon passed into obscurity.

More recently a similar material has been much vaunted as the millenium-maker. But in the regulation size cavity in steel testing tube, it has been found this will not hold up within eight points of zero, even when submerged in water while hardening, and since the breaking down of edges of fillings shows a shrinkage and absolute lack of adhesion to the cavity wall, we are obliged to say that the much-sought-for results has not been attained in this material.

The power of an ultimate product of an admixture of this sort to withstand the destructive tendencies of alkaline solutions and organic acids, makes investigation along that line quite fascinating. If this tendency of these products to shrink during hardening can be overcome, we will have a preparation which may possibly have some special uses, and yet, if it cannot be so compounded as to give a more dense and resistant mass than can be made from a modified zinc oxyphosphate, then there would only be left for it the filling of a few well protected cavities for which we have already a reliable material in a properly modified gutta-percha.

With "Archite," a material of this class, we are all familiar. It was on and "off again" from the same faults possessed by Dentos. It seems probable from indications to date, that cements of this class can now be produced to be free of that fatal shrinkage, of uniform working qualities and with physical qualities making them valuable in special conditions. The chemical and physical nature should give encouragement. To again quote an authority on cements: "In conclusion, I will add that the opinions of some people here who are in position to form them, coincide with those forced upon me by my experiments and tests. They are that several much vaunted silicious cements of the present day are total failures, that some accomplish to an extent what should be expected of them, and withal that there has been enough advance over the early utter failures to warrant the profession having a lively interest to the extent of testing cautiously all materials of this class offered. By testing, I mean making shrinking tests out of the mouth and then if the use of the material clinically seems at all warranted, to test it very cautiously in a clinical way. Shrinkage tests can easily be made by filling short sections of glass tube,

one end of which has been closed or nearly closed, by melting in a Bunsen flame. The glass tube test is not absolutely scientific, but it will give sufficiently accurate suggestions."

*Setting.*—The modification of setting depends on the retardent of the liquid and on the pigment of the powder, lighter shades giving quicker and the darker shades slower setting with a given liquid. The powder should be carefully guarded. The dental cement powder when it leaves the furnace, is absolutely free from moisture. It is then calcined, ground and bolted, and during this process, it takes up a certain percentage of water, due to the time that it is exposed and to atmospheric conditions. So that after the powder is properly prepared, it is placed in the ovens and the excess moisture driven off. Then it is placed in ground glass stoppered bottles. If a dentist then allows a bottle to remain open, it will again take up a percentage of moisture, which to that extent changes the formula of this combination, making the cement "stringy," as it is sometimes termed, which hastens the setting of the cement. So that if it takes up 2, 3, or 4 per cent of water, the formula has been changed to that extent. So you will understand that if a dentist wishes to obtain the best results in a dental cement, he must exercise care with the powder as well as with the liquid. He should keep the stopper of his powder bottle in the bottle, but as the powder is not so apt to become contaminated or changed after the package is opened, our attention is more forcibly directed to the care in the use of the liquid. The tendency to crystallization of a properly modified solution of phosphoric acid calls for great care in its handling during consumption. The liquid should never be used from the original bottle, but should be transferred to one of proper size having a telescoping glass cap instead of a cork fitting within the neck. The best of the sort obtainable is, I think, the No. 4 S. S. W. office preparation bottle, as the S. S. W. minimeter or some other form of dropper may be kept within. With the ordinary container, with ordinary handling, there would always be more or less liquid standing about the cork, exposed to the air, which will attract water from the atmosphere during the summer months and in winter give up water to the atmosphere of an artificially heated room. In summer the diluted liquid passes into the bottle on

each removal of the cork, altering the specific gravity to that extent, and in winter a crystal formed about the cork may start crystallization in the main mass of liquid, which would probably have remained free of crystals if transferred to the other form of bottle, with which this could not happen.

In the use of the liquid there are other features to be observed. The dental cement liquid is a phosphoric acid and water combination, controlled by other elements. Phosphoric acid, of course, is the essential portion of this liquid. If we were to take an 85 per cent solution of phosphoric acid and endeavor to mix it with a zinc oxid, it would harden the instant that the acid came in contact with the oxid, and would generate so much heat and set so rapidly that it would be impossible to spatulate or handle it. So then it is necessary to dilute and modify this acid that its action may be controlled. As the liquid goes to the profession, the acid in it is in exact proportion to the other elements, and the slightest change materially affects the quality of the cement. Then every precaution must be exercised to maintain its quality. We will now suppose a package of cement in the hands of the careless dentist and note the results and the complaints.

From the package in his cabinet he takes the liquid bottle, and without shaking or agitating it, proceeds to place a quantity of the liquid on the slab. Now the dropper reaches too near the bottom of the bottle, and, consequently, he takes a portion of the liquid which contains more than the proper proportion of the modifying elements, for these elements having greater specific gravity than the phosphoric acid and water, drop to the bottom. It is necessary to insist that the liquid be well shaken every time it is used. For if he begins and continues to take out of the bottle the elements which remain near the bottom, eventually he will have left the almost pure phosphoric acid and water, without a sufficient portion of the modifying elements which are so necessary. The result will be that the first portion of the liquid used will retard the setting very materially. But before the liquid in the bottle becomes exhausted it will come to produce a very rapid setting element, generating excessive heat. In either case the cement will be imperfect, developing weakness, as the chemical action has not been normal.

*Mixing.*—The manufacturers have done their part toward producing a perfect material. There must not be any half-way method employed on the part of the dentist in bringing together such a product in a perfect mix. For the dentist who doesn't know how to spatulate or mix his cement, or who is not going to try to learn, thinking that the directions that go along with the package are nonsense, might as well buy a cement which sells for 50c a pound, for such a person will get as good results from that as he will from the best cement on the market. There is an art in mixing and manipulating a dental cement, and yet an easy one to learn if care is exercised and the directions carefully followed. But dental cement qualities in the hands of the careless dentist take wings, as soon as he puts his spatula to the materials.

When you find a cement that sets too rapidly, or sets too slowly, or crumbles, or is granular, or generates heat, or becomes greatly discolored, or two mixes do not give the same shade, or is stringy, or does not have tenacity, it may possibly be due to an improper mix of the materials. Some essential rule has been violated. Every chemical element which enters into the manufacture of a dental cement has a positive value and action, and, if altered or changed in careless use, you will have one of the troubles enumerated above.

In regard to the granular condition, this is apt to be caused through the endeavor upon the part of the dentist to mix too great a quantity of the zinc oxid with the liquid at one time.

Now for the mix, for so much depends on this. The first thing necessary is to have the proper instruments—slab and spatula. A slab of glass at least  $4 \times 6 \times \frac{1}{2}$  inches should be used. (By keeping several on hand you are assured of a clean one when in a hurry.) Then you need a spatula that you can really get hold of, one that is properly nickel-plated (if you cannot obtain a solid nickel one), and of such strength that the powder can be mixed or *rubbed* into the liquid, not stirred together. The slab must be perfectly, yes scrupulously clean. In a booklet recently sent out by one of the cement manufacturers, there was an endeavor to instruct the profession through a series of photographic views. In the booklet was pictured a few drops of the liquid on one end of the slab and a bulk of the powder on the other. Another illustration showed



the pulling into the liquid of a small quantity of the powder and mixing it thoroughly with the whole quantity of liquid on the slab.

The second operation was to pull into that mix another small quantity of the powder, and so on. This was to show that it is not wise to endeavor to mix too large a quantity of powder and liquid together at one time. The reason for this is that as soon as the zinc oxid is brought in contact with the liquid, the oxid makes an effort to take from that liquid the entire quantity of phosphoric acid, and this chemical action is so rapid that the dentist cannot spatulate his material before the chemical change takes place. If he pulls into the liquid a small quantity of powder at a time, he can control this condition. The crumbling of a dental cement, and the granular or gritty condition of which the dentist often speaks, is due to this improper mix. In mixing a majority of the cements (although there is an exception to this rule), do not stop as soon as the mixture has the appearance of being worked together, but continue to spatulate or rub it. When the powder and liquid are mixed together, it will have the appearance of setting, but continue to spatulate it for a few seconds. You will find that it becomes plastic again. During the process of spatulating the cement, the chemical change is taking place on the slab, which is desirable. A cement can be kept plastic quite a time if it is properly spatulated, and when it is, it will set with greater regularity and possess greater strength, with every other quality at a maximum. So that we say, "Don't stir your cement together, but mix it;" and mix it thoroughly. If, during the process of mixing, you find that there is not quite enough liquid to make the mix of the consistency you desire, do not dip the spatula, covered with cement, into the liquid bottle to take out sufficient to make the mix of the consistency you wish. In so doing you leave a small quantity of oxid in the liquid which materially changes its character and several dips of this sort will destroy its value almost entirely. Never, *under any circumstances*, allow the zinc oxid to come in contact with the liquid in the bottle. Discolorations, and the fact that two mixes do not give the same shade, are in nearly every instance due to the use of an improper spatula. "Some dentists are using the same spatula which they

used at college five, ten, or perhaps fifteen years ago, and without the slightest sign of nickel, even on the very end of the handle. And yet, with such an instrument they expect to obtain proper results." A dental cement spatula should be of pure nickel, or of bone; and if the dentist thinks he can't afford such an expensive instrument, then a steel instrument properly nickel-plated, and *not* a platanoid spatula, should be used.

The reason for using a steel spatula, nickel plated, is that the nickel prevents the steel or iron coming in contact with the phosphoric acid solution, for if steel or iron comes in contact with this acid it forms a ferrous phosphate, which results from the action of the phosphoric acid upon the iron or steel. This formation of ferrous phosphate is the cause of the discoloration in a dental cement and it affects to a degree the quality of the material.

*Cement Uses.*—Possibly a few hints as to the many uses to which cements have recently been put, may be appropriate at this time.

To W. D. Madin of England we are indebted for a recent, and it appears to me, a meritorious method of lining cavities with cement. The rubber having been applied and the cavity dried, a piece of No. 30 gold foil is cut exactly as for taking an impression for an inlay, thin cement is now mixed (again as for an inlay), and with it the inside of the cavity is smeared well over, and No. 30 gold foil is pressed home into it with amadou, in the usual impression method. Special pressure is given in the direction of the undercuts, and often a ball burnisher is pressed in that direction also. This gives an under cut cavity, beautifully lined with gold, with cement in every possible irregularity. It is important to see that the edges of the cavity show up quite sharply, as only by that can one tell that when the filling is finished there will be no cement at the margins. Cement having hardened and every trace removed from margins, proceed to fill and burnish as usual.

Dr. Madin also refers to a special case of the cervico-labial cavity, the cavity being prepared, dried and kept dry with a napkin or wool roll, and the impression gold overlapping the gum effectually prevents any oozing. The essayist would suggest the

use of tin foil in a similar manner to facilitate the filling of deep cervico-buccal cavities where amalgam is used. By the clever use of cement we know that the protection obtainable at the edges, and the adherence of the cement, make gold the ideal filling for teeth with frail walls.

Many operators are growing to distrust fillings, the material of which does not stick to the walls of the cavity, and for a long time I have, with Dr. Madin, rarely made an amalgam filling which was not pressed into wet cement. Where a non-irritating cement is used, we have the ideal cavity lining. In this connection I would recommend the reading of a very able article upon "Care of the Dental Tubuli Under Filling Materials," by F. S. Triskey, published in a recent number of the *Pacific Dental Gazette*.

A happy method I have followed for some years, where cement is used to seal medicaments in teeth under treatment more especially when divitalizing pulps, is to incorporate in a thin mix sufficient absorbent cotton to produce a mass slightly less in size than the cavity. This is easily placed without pressure on the pulp, and more easily removed than when cement alone is used. Try it.

Keep a little powdered soapstone handy. It prevents the cement sticking to the instruments, and when an occlusal temporary cement filling is placed, by brushing a small piece of tin foil with soapstone, placing over the filling and applying pressure, a more durable filling can be produced.

And that reminds me of a method introduced by Dr. Ames of Chicago. An impression of the cavity is taken with modeling compound, which extends well over the edges and of sufficient mass to give strength. The outline of the cavity is cut away and by using this as a counter die, the cement can be forced under greater pressure in the buccal, cervical, and occlusal cavities, an especially useful method in the manipulation of copper oxyphosphate.

Regarding the many uses of copper oxyphosphate cement, Ames states this material may be used of a creamy consistency for setting crowns, etc., giving the strongest attachment known. On account of the extreme strength from a creamy mix and its remarkable adhesion, it can be used for the correction of a defect

in the fit of an artificial denture of any material by simply pressing the plate with cement accurately to place, the surface of the plate having been properly cleaned and the tissues made reasonably dry. A make-over may be deferred and often entirely avoided by such of this material.

The original copper oxyphosphate sets very promptly when subjected to the temperature of the mouth or a higher temperature produced by hot air, water, or gutta percha. It is an excellent material for the temporary if not permanent filling of those extremely sensitive cavities near the gum line upon the buccal surfaces of molars. It is a most satisfactory pulp covering where the color is admissible. It wears remarkably well upon masticating surfaces. Temporary molars can be carried through the period of usefulness with this material better than with any other plastic. It is not necessary to have a surface absolutely dry for its proper adhesion, as a mere trace of moisture rather facilitates its use, this trace of moisture being taken up by the cement in its crystallization.

In closing let me repeat that if this small gathering were collectively kept together in principle and practice, it would be the means of producing a revolution in dentistry. If we were to take the best from this Society and from the other Dental Societies we attend and weave it into our practice, it would be as a building chart is to an architect—a graphic map of the principles and methods that will rear and fortify your professional life, your future independence, your income, your success.—*Pacific Dental Gazette*.

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SHALL WE CONTINUE TO USE THE BANDED CROWN? By S. Marshall Weaver, D.D.S., Cleveland, O. In these remarks it will be necessary to adhere closely to the subject, not considering general crown and bridge work, which is almost inexhaustible.

The discussion to follow will be relative to single crowns and stationary or fixed bridge work, when porcelain faced crowns are desired for abutments on the six anterior teeth.

The selection of this subject is the result of observations of about

seven years' practice with this particular line of work, the one of most interest to the writer.

It was observed that nearly every crown if fitted with band, which was properly concealed by the gum on the labial aspect, would in a short time cause a recession and a decidedly unhealthy condition of the gingivae, no matter how perfectly the work had been performed. It was also noticed that on properly fitted Logan, Davis and similar crowns when bands were not used, there was a perfectly normal condition of the gum, and a beautiful lifelike appearance of the tooth, caused by the surrounding tissue being of



FIG. I

the normal color instead of that ugly, dark, congested appearance so much in evidence around the crown which carries a band, immediately branding it to the observer as a *false tooth*.

Is it more than a simple conclusion after these observations that we should profit by a study of such conditions? If we did not come to some solution of the problem and suggest a remedy for this injurious condition we would not be doing for humanity what we profess when we have D.D.S. attached to our names.

The first method in use was the bandless crown imperfectly adapted to the surface of the root and held by a threaded gold wire or a wooden peg. At this time they had no medium to close up the space intervening between root and crown. The life of this crown was very short. About 1879 Dr. Richmond brought out the banded crown as we have it to-day.

This seemed at first to fill all requirements, but after a time the irritation caused by the band set up such violent inflammation

that other methods were sought, and the Morrison style of crown came into use. This overcame the irritation of the gums, but was not sufficiently strong.

Later, various crowns such as the Logan, Davis, Justi, White and others were given to the profession. These crowns came in two distinct classes; the fixed and the detachable pin. For the former I have no use whatever, as the latter has all of the advantages and none of the disadvantages.

Within the last four years I have found only two cases in

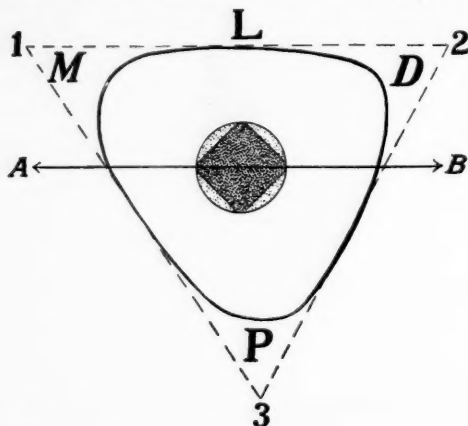


FIG. II

which banding seemed advisable. One of these was a fractured root, caused by a blow, and the other a root which had been open for several years and all that remained was the shell leaving a knife edge to fit the crown against, but when the band was used it gave sufficient resistance to make a fairly strong tooth. These, I might say, were exceptions to the rule.

First of all, I want to ask the question, what do you use the band for?

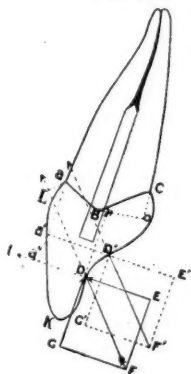
A good many will answer: "To keep the root from splitting and get the full resistance of the root against the force of mastication." Others will say: "To seal the joint between the root and crown, so the cement will not wash out."

Taking these reasons into consideration we will try to analyze them and see what conclusion we reach.

How many *split roots* do you encounter in a year compared with the number of teeth *ruined* by the *criminal use of bands*, and if the roots are split, do you know how it was done? Did it ever occur to you that most of the anterior roots are split labio lingu-ally, a thing almost impossible to occur from any leverage brought to bear against the lingual side of the crown?

Now then, what causes these roots to split labio lingu-ally? Was it a round pin that fitted the post hole too tight, a method practiced by some, which does not allow the cement to escape, and by hydraulic pressure fractures the root while the operator is

FIG. III



trying to force the crown to its proper position? Or was the cement too stiff and a mallet used to force the crown on, or, not knowing when the crown was in place, by additional malleting the wedge shaped crown driven into the V-shaped end of the root, fracturing it by simple mechanical force? See Fig. I in which the colored portion represents the fracture in the root.

Some operators ream out the root till it resembles half of a cocoanut shell, thinking for some unknown reason, it might make the fitting of the crown easier.

The V-shaped face of the root mesio distally is a necessity owing to the line of the *gingival attachment* which should be *followed* in grinding off the end of the root preparatory to crowning.

In the proper preparation of a root the tooth should be ground off to a point just under the free margin of the gum following



the gingival line, care being taken not to injure the gingival attachment, if it can possibly be avoided, as this is one of the causes of receding gums which may ultimately cause a partial or complete *denuding* of the root.

It will now be necessary to go into the general shape of a tooth and see where the force of mastication is transmitted to the root and where the leverage is applied. By studying Fig. 2, which represents a cross section of a central incisor, we will note that nature in shaping this tooth has put about three-fifths of the bulk of the root anterior to the line A B drawn through the center of the pulp chamber. This would be the portion of the root that would theoretically receive the strain, and A B would represent the probable line of fracture due to mastication. You will also notice that the remaining lingual portion below the line A B is of such shape that it would not draw any of the hard tissue along with it causing any backward pull on that two-fifths of the root; more than the attachment of the pericemental membrane. Now is it probable under these conditions to split the root? Again, let us consider the longitudinal section. Fig. 3. Let A B C represent the receiving end of the root properly shaped as previously described. During the process of mastication a force is exerted on the crown represented by F D.

Before considering the action of the transmitted force of mastication, let me explain the action of a force acting in a somewhat similar manner upon a block of wood (B) Fig. 4, resting upon a table (T). Let us consider that there is a force acting upon the side of the block tending to tip the block over. Such a force may be represented in magnitude and direction by the length (to some arbitrary scale) and direction of the arrow FD. This angle is slightly exaggerated for sake of demonstration. Now it is evident that if a force equal in amount to our force F D but acting at the top of the block and downward as F' D' instead of in the direction F D that there would be no tendency for the block to be tipped over. Again, if a force equal to F D and to F' D' acted as does the force F" D'', at the point D"" at right angles to the axis D' N of the block, the tendency to tipping is greatest, that is to say, that a given force will produce the greatest tendency to tipping over the block if it acts at right angles to the axis of the block, and with the least tendency if in line with that

axis as it is when at  $F'D'$ . In fact  $F'D'$  exerts no tendency whatever toward tipping over the block other than to diminish the action of  $FD$  to the extent of its relative length.

If we are considering a force such as  $FD$  acting neither in line with nor at right angles to the axis of the block—and we desire to determine how that force is acting in these two ways, it is necessary to resolve the given force into two component forces which acting together will produce the same result as the single

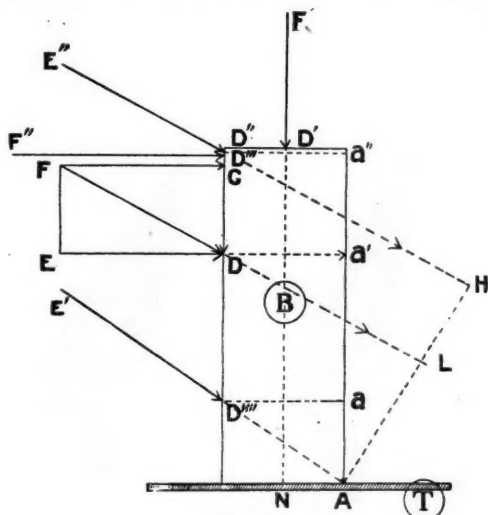


FIG. IV

force  $FD$ —one  $DG$  in line with the axis and the other  $ED$  at right angles to it. This resolution, as it is called, of a single force into components, is a directly opposite process from the combining of two forces into one by the method of the parallelogram of forces. It is evident that of the two component forces one  $GD$  acts to hold the block on the table and the other  $ED$  tends to tip it over.

Hence, to find the tendency a force acting at any angle on the surface of a body may have to cause a tipping of that body it is necessary to find the component force acting at right angles to the axis, which may be tipped over if the force is great enough.

Further, if the force acted at  $D''$  instead of at  $D$  the tendency to tip would be greater, and if at  $D'''$  the tendency to tipping

would evidently be zero. By a law of mechanics the relative tendency is as the distance of the point of contact of the force from the table. This is simply because the force is acting at a greater leverage, for example, let the force  $F D=10$  lbs. and the moment  $(A L)$  be  $\frac{1}{2}$  inch in length, then the tipping force would be  $10 \times \frac{1}{2}=5$  lbs.

Now let us consider diagram 3, which is similar to Fig. 4, with reference to the action of the transmitted force  $F D$ . Instead of the block of wood on a table we have a crown *fastened* to the end of a root.

This *transmitted force* of mastication represented by  $F D$  may be resolved into two component forces, the normal one at right

FIG. V



FIG. VI



angles to the surface of the tooth represented by  $E D$  and the tangential  $G D$  acting directly against the end of the root, this tends to hold the crown in place, and resists the tipping tendency, while  $E D$  tends to push or tip the crown on its fulcrum  $A$ . Whenever one force acting on a rigid body is equivalent to two or more forces, it is called their resultant, and they are called its components.

The amount of tipping force is governed by the position on the lingual surface  $C K$  of the point where the force  $F D$  is applied as  $D$  or  $D'$ . This tipping force  $E D$  varies directly with the length of the *moment*  $A L$  a line drawn at right angles from the projected line of force  $F D$  to the fulcrum  $A$ . Algebraically expressed (tipping force=Force lbs.  $\times$  length in inches of  $A L$ ). If  $F D=100$  lbs. and  $A L=\frac{1}{8}$  of an inch, the tipping force would be  $100 \times \frac{1}{8}=12\frac{1}{2}$  lbs. of tipping force.

If the given force  $F D$  acted at  $D'$  instead of at  $D$ , the tendency to tipping would be negative as shown by the projection of  $F' D'$  falling back of the fulcrum  $A$  which immediately starts a tipping force in the opposite direction.

Now the question is, what force is necessary to counteract this outward motion  $E D$ ?

If we had not considered carefully the laws governing motion the band would seem to be the solution, but when the transmitted pressure is applied in the direction  $F D$  if there is motion of the crown the fulcrum immediately establishes itself at  $A$ .

When the root is properly shaped for handleless crowns, the lingual bevel of the root  $C B$  (Fig. 3) renders it impossible for the crown to be shoved bodily forward *provided the post does not bend, stretch or loosen* at either end.

Looking at Figs. 5 and 6, 5 shows the crown in place, and 6 the only position the crown can take under the force of mastication, showing that the band is pulled directly off the root, *if any motion occurs*, instead of being pressed against it as generally believed. I have but two remedies for the correction of this evil, first the *proper shaping* of the root, and second the *proper* shape and size of pin.

Nearly every failure within my observation has been due to dowel pins too small both in diameter and length, usually the former.

Many operators seem to think if they can get the pin to the apex of the tooth the diameter is immaterial. Consequently we find many posts resembling hat pins in proportion.

The requirements of a good post is *rigidity sufficient to withstand all strain and square* in shape.

Pure platinum should *never* be used. Iridio-platinum and English pin metal answers all purposes.

Logan crowns demonstrate the failure of pure platinum by the many open joints we encounter in everyday practice.

If the pin is *not ductile* under the force of mastication, and has sufficient *roughness* to keep it from being pulled out of the cement either in the root or porcelain, and *rigid* enough so it can not be bent, there can be *no possible opening of the joint*. This I want to impress as the *most important factor in crown construction*, and the mission of this paper.

Taking into consideration the different methods of getting adaptation to the root such as the burnishing of a platinum or gold floor and filling in with porcelain or gold, the use of thin articulating paper and also the new moldable porcelain, all familiar methods, it seems hardly necessary to say that any man who cannot get a perfect joint had better practice in the laboratory until he can. It is not a case of whether he *can*, but whether he will take the *pains*.

The half band, in my judgment, is nearly as injurious as the ferrule, because it encroaches on the inter-proximal space, causing irritation at the most vital point of the gingivæ. How many dentists would countenance the practice of allowing approximal gold fillings to extend into the proximal space similar to a band and call it good practice?

One point of great importance is the preparation of the post hole. This should be carefully done after the crown has been selected, as the pin holes in the crowns vary slightly. This variation can be accommodated very nicely by reaming out the pulp chamber to suit the crown.

A round bur should never be used as a reamer. A pointed fissure bur of the proper size answers the purpose very well. The pin should be made of wire, usually No. 14 gauge, with the sharp edges slightly rounded, and sized so it will fit tight into the root and crown. This prevents any rocking motion and facilitates the grinding, as the crown goes to the *same* position *every time*, a thing *impossible* if the pin does not fit the root and crown snug.

Now, why should we use a square pin? First, because we get more strength for the given amount of material than in a round pin, *if* the diagonal of the pin is placed labio-lingually, Fig. 2. Second, the cement has four ways of egress, which insures the crown of easy adjustment in setting and obviates any possibility of hydraulic splitting.

The lack of restoration of the lingual lobe is also a cause for much irritation. In most ready made crowns this point should be restored and many times exaggerated by baking on additional porcelain after the crown has been articulated. To get the right tip to the crown it is invariably necessary to grind off this important part of the tooth which nature has given for the express purpose

of diverting the hard food stuffs away from the gingivæ, thus preventing injury to this tissue.

When setting a crown with cement I always use a jiffy cement tube which insures the perfect filling of the root, thus excluding air bubbles.

Another important point for the operator who is afraid of having leaky joints is the use of Evans' guttapercha cement, a substance which, if properly used, will not wash out, and is of great advantage if the crown or bridge has to be removed, which is often advantageous in filling adjacent teeth. The pin is supposed to be rigid enough so it cannot bend or stretch. Referring to Fig. 3, I contend that the incline plane C B, or hypotenuse of the triangle C B O, answers the same purpose as a band the length of C O, for exactly the same *amount of tooth* is in front of and *resisting* the same amount of force as though the pressure was exerted on the leg C O of the same triangle.

There are probably many points of interest left out in trying to cover the subject in so short an article.

I wish to voice Dr. George Evans in his latest work wherein he states: "Modern artificial crown and bridge belongs to the department of dentistry formerly termed mechanical, but the judgment, skill and scientific information required place it far above ordinary mechanical dentistry, which has sunk to a low estate since the introduction of vulcanite. I regret exceedingly that so important a branch of dentistry has been over-shadowed by porcelain and gold inlay work."

Much of this lack of progress I attribute to the dental laboratories, not wishing to put one bit of discredit on them, but on the dentist who seems to think the laboratory man can perform miracles and all he has to do is to send a photograph of the patient's grandfather and write careful instructions on the back to please make a Richmond crown for the left upper incisor, shade to suit a lady twenty-seven years old.—*Dentists' Magazine*.

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A SYSTEM OF UTILIZING ATMOSPHERIC PRESSURE FOR THE RETENTION OF LOWER PLATES. By D. H. Young, D.D.S., Attica, N. Y. Physical science tells us that the atmosphere exerts a pressure of 14.7 pounds to the square inch on all objects on the earth, our bodies included. Since the aver-

age man has a body surface equal to about 16 square feet, we find by multiplying 144—the number of square inches in a square foot—by 14.7—the number of pounds pressure on each square inch—that it equals 2,116 pounds, or over a ton, to the square foot; and since we have 16 square feet of surface on our bodies, the pressure upon each of us is over 16 tons. This gives us an idea of the strenuous life we are compelled to live. Such high pressure, however, is our birthright, and not our choice.

In this principle there is nothing new to us. We all familiarized ourselves with it when boys in school, and yet few realize that it is an ever-acting law of nature, which when brought under our control may be made to serve many desirable purposes.

It has been very successfully applied in the retention of upper dentures, which not so very long ago were held in position by springs; but it yet remains for us to find out how we may best apply this force to the holding of the lower teeth in position. This brings us to the much-discussed subject of plates, but shall we not stand justified if by considering this subject to-night we may be able to help each other in solving this problem of lower plate retention?

Doubtless many have their own methods of securing atmospheric pressure on full lower plates, and some may never have tried it at all; so, in the hope of bringing out a discussion on the subject, I shall endeavor to describe a method which I have used for several years for securing atmospheric pressure on the full lower plate. For impression material I have used modeling compound—Perfection compound has given as good satisfaction as any. Plaster of Paris, of course, is an ideal impression material, but it does not give the kind of impression that is desired in this method.

The compound is warmed to a consistence at which it will adapt itself readily to the shape of the mouth, placed upon the tray, put in the mouth, and pressed down almost as far as you desire it to go. Then wait for a minute or two until it hardens slightly. During this interval of time I have my assistant direct a current of cold air into the mouth from a rotary fan in the dental engine, which procedure chills the outer layer of the compound and prevents it from flowing away from the jaw when



pressure is put upon it. While the layer of impression material that is in contact with the tissues is still warm and plastic, the tray is pressed down a little farther, and held steadily—with about half the force used in pressing is down the first time—until it is quite hard. The tray is then removed and the cast is poured.

In order that we may know why we proceed in this manner, let us go over the taking of this impression again. In the first place, when the material is put in the mouth and pressed down we get an ordinary impression; after it is allowed to stand a little while and the outside is chilled and pressed down a second time, the impression is changed from the ordinary one, but in what way? When pressing down on the tray the second time, the hard ridge of the alveolus cuts just a little deeper into the impression material, and remains practically unchanged, while the soft tissues down on the sides of the gums, about where the border of the plate comes, are compressed slightly. When the plate is made on the model from this impression and put into the mouth, the margins of the plate are sealed all the way round, and this converts the whole lower surface of the plate into one great suction-pad—if we may use that term.

One of the most delicate parts of the operation is the trimming of the plate to just that line that will best seal its borders, for if it be too long it will give the muscles an opportunity to displace it; if too short it may allow the air to pass in, and thus defeat our whole purpose.

It is self-evident that the upper plate is retained by air-pressure against gravity, while the lower plate adds its own weight to atmospheric pressure; and so, compared with the upper, the lower has twice its own weight to add to the atmospheric pressure, thus showing that it is a better subject to be retained by such pressure than the upper plate.

The lower plate has always been a *bête noir* in dentistry. Of course we all would rather fill, treat, crown, or bridge to meet the conditions we find in the mouth, but occasionally there come before us conditions for which the science and art of dentistry has nothing better to offer than a plate. How necessary, then, both for the comfort of the patient and for our own credit, that it be made to stick!—*Dental Cosmos*.

## THE USE OF ARSENOUS ACID NOT OBJECTIONABLE.

—In recent years we have heard, on all sides, much condemnation of the use of arsenous acid, by those who for years have used it. Many of our best men have been most positive in their statements that to use this drug at this day and age is almost an act of criminal mal-practice. We regret, indeed, that many of these men have been so loud in their denunciation and condemnation of this preparation, that many of those who believed in its use still, and continued to use it, were almost afraid to acknowledge their adherence to the old lines of practice. This action upon the part of the members of the profession, and there were not a few, goes to show how readily we are carried away with something new, only to learn in time that we have overstepped the bounds of propriety and moderation in those things which are of decided merit. Why any in the profession should so suddenly turn from an old tried and true friend, and become such ardent advocates of newer and less satisfactory methods, seems hard to understand. Why the writer, who has ever been so great a supporter of anesthesia of any kind in the relief of humanity, and who has been considered immoderate, by many, in his advocacy of the use of cocain, in this instance lifts up his voice to cry out against the thrusting aside of arsenous acid in the removal of pulps from teeth, may seem unexplainable to many, but we trust that our critics will realize that we can see value in things aside from anesthetics.

That cocain can and should be used in many, if not in most cases, is possibly true, but that there are many cases where arsenous acid should be used, to the exclusion of all else, is an indisputable fact. But that cocain is used in hundreds of cases where it is contra-indicated is also an indisputable fact. In taking up a discussion of question, it is done from the humanitarian standpoint. There are many cases where it is utterly impossible to use cocain without inflicting considerable pain in so doing, and there are many cases in which it is an utter impossibility to remove all the pulp tissue from the canals of the teeth by this method. It is the writer's belief that in all teeth, having small and tortuous canals, it is absolutely necessary to use arsenous acid in the destruction of the pulp tissue if the most satisfactory results are to be accomplished.

The satisfaction derived from its use after many years of the most potent services, backed by records of thousands upon thousands of teeth that have been handled in this way, and are doing the most valuable of service to their owners, is certainly evidence which is unsurmountable as to the value of this drug. In fact, much of the success in root canal treatment of the past in dentistry has been due to the use of this most valuable of agents in the hands of the skilled as well as unskilled operator. The fact that thousands upon thousands of root canals which have been only partially filled have remained quiet for years and possibly throughout the entire lifetime of the patient without giving any signs of trouble, has been due to the preservative and mummifying properties of the arsenous acid used in the devitalization of these teeth. And it is the belief of the writer that many of those who have discarded this valuable drug will, in the near future, if they have not already, come to a realization of the mistakes they have made in discarding it for remedies which have been theoretically described as being more desirable, while the practical side remains yet to be proven. From the fact that arsenic is used, and is one of the most important or necessary adjuncts to embalming fluids in use today, and that it is used by the various taxidermists and those interested in the preservation of animal tissues, is one of the strongest reasons for again returning to its use.

The writer was very much gratified recently, when at a recent meeting of one of our prominent dental societies this question was brought before the body and a vote was taken to ascertain how many of the men were using arsenous acid, and it was found that almost the entire membership was using it to a greater or less extent. This was all the more gratifying because within a year or two had a similar vote been taken few, indeed, would have been those who dared express themselves as advocates of that drug.

So let us not, too hastily, discard the old, which has been found "tried and true," for the new, though theoretically the results be the most promising and the advocates be many.

Strange doctrine, to preach you say, for one at the head of a department, the only excuse for the existence of which is the promulgation of new methods and means.

No, dear reader. We would only counsel moderation in chang-

ing from a method which gives gratifying results and stands the tests of time, for a newer method promising flattering results, but lacking sufficient age to entitle it to full confidence. Every new thing of promise should be studied and experimented with in the most intelligent manner, holding our commendation or condemnation till we are certain that the results are those to which the thing is justly entitled, after we have given to it that which should be given, that is the very best that is within us. In other words, let us be sure that we have done our part towards the thing in question and to the profession and humanity.

In conclusion let us reiterate by saying that both arsenous acid and cocain have their places in the destruction of the dental pulp. The cases should be selected for each. While cocain and pressure should be used where possible without causing pain and where all the pulp can be removed, where pain would be inflicted or all fragments of the pulp cannot be removed, arsenous acid must be used if the most gratifying results are to be obtained. When used, arsenous acid should always be accompanied by cocain if the irritating activity of the arsenic is to proceed with the least amount of reflex disturbance. A word to those who have not used cocain combined with arsenic. Cocain retards the action of the arsenic, requiring a much longer period to produce the result, but permits of pulp destruction without the slightest disturbance if the application is properly made.

The usual time required is from a week to ten days if applied directly to the exposed pulp.—*Editorial in Dentists' Magazine.*

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"ANTRUM HIGHMORI!" By Herbert D. Kistler, B.S., M.D., Butte, Montana. Gross human anatomy has been very thoroughly studied and there remains little or nothing open to the investigator in this field. No new organ has been discovered for years and some of our most accurate descriptions of anatomical structures were written several hundred years ago. Much, however, can be done to improve our knowledge of the relations of the various organs and thereby better our diagnostic facilities and methods of treatment. By means of the analytical method of study, dissection, we obtain a knowledge of various organs as individual structures, but we destroy the inter-relations of the intact body. That we may understand these

inter-relations, we must combine the analytic with the synthetic method of study; we must study the body with its parts in their normal relationship to each other and ultimately build up a mental and material picture of the body and all of its component parts.

In the actual practice of medicine, we inspect only the surface and mentally project upon it the underlying organ which is being considered. We conclude that the organ is normal or diseased by the fact that its surface outline does or does not correspond to the outline usually found for that organ. This phase of anatomical study is best accomplished by means of sections made in the various planes after the body has been so preserved that each organ retains its normal size, shape, position, etc. By this means we can remove and replace the sections at any level or region and see the relation any particular structure bears to any other structure and to the surface.

The object of this discussion and demonstration is to review the anatomy of the antrum by means of both dissection and sections so that we may better systematize our various disconnected ideas into a more practical working knowledge. We first consider the development of the antrum because it explains several points which cannot well be understood without it.

In the first few weeks of fetal life, the orbit is separated from the mouth and nose by the approximation and junction of the maxillary with the lateral process of the fronto-nasal process. In this layer of tissue separating the orbit from the mouth and nose the maxilla is formed.

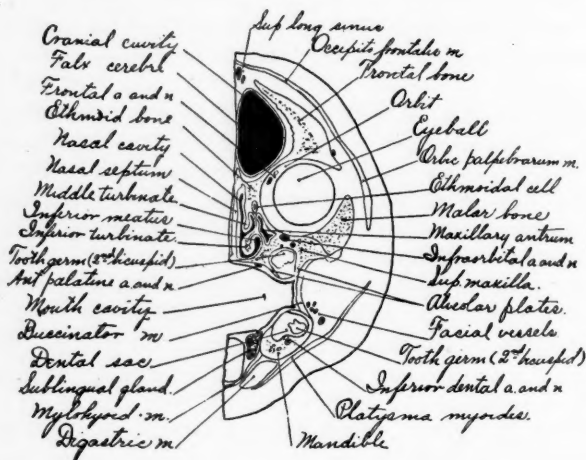
Ossification begins during the second month of fetal life in five different centers, which become so united by the sixth month that they lose their individuality. The centers of ossification are malar, orbito-nasal, palatine, nasal and incisive. From the orbito-nasal center are developed the floor of the orbit mesial to the infraorbital canal, the frontal process and the wall of the antrum. During the fourth month of fetal life when the turbinated bones begin to form as mere ridges on the lateral nasal wall, there appears a pit or depression between the middle and inferior turbinates. This pit is the beginning of the antrum and is produced by a resorption of the interior of the maxilla accompanied by an evagination of the nasal mucous membrane to line the cavity thus formed.

This resorption is very limited during the first years of life be-

cause the distance from the orbital cavity to the mouth cavity is very short, the alveolar groove is close beneath the infraorbital groove, and the greater portion of the body of the maxilla is filled with teeth follicles.

At birth the antrum is limited to the supero-mesial portion of the bone. Fig. 1. It is a mere slit-like cavity which extends from above downward and lateralward. Its anterior-posterior extent is from two to five millimeters. In no place is the cavity more than two millimeters in width. It is about one-half centimeter above the

FIG. 1.



level of the nasal floor and is entirely mesial to the infraorbital canal. Fig. 1.

In some of the specimens examined, the cavity is very irregular in extent, being mere tubular outgrowths of the nasal cavity. In such cases one limb extends backward and one lateralward from the opening into the nasal cavity.

The alveolar process of the maxilla develops as two plates which grow downward from the body of the bone and when the teeth are ready to erupt they descend. Resorption of the bone follows the descent of the teeth thereby increasing the antral cavity downward. The bicuspid and molars erupt in order from before backwards,

and the greatest increase of the antrum posteriorly is coincident with the eruption of the permanent teeth.

The dictum of Sir John Thomas that the alveolar bones are entirely subservient to the teeth has been extended by others to apply as well to the body of the bone, because in it are located the teeth follicles. Turner, of England, opposes this view and believes that the eruption and position of the teeth are dependent upon the bony growth. He cites the irregularity of the teeth in adenoid children in whom the maxilla is malformed because of the disturbed respiration. These cases, likewise, present the greatest irregularity of the antrum.

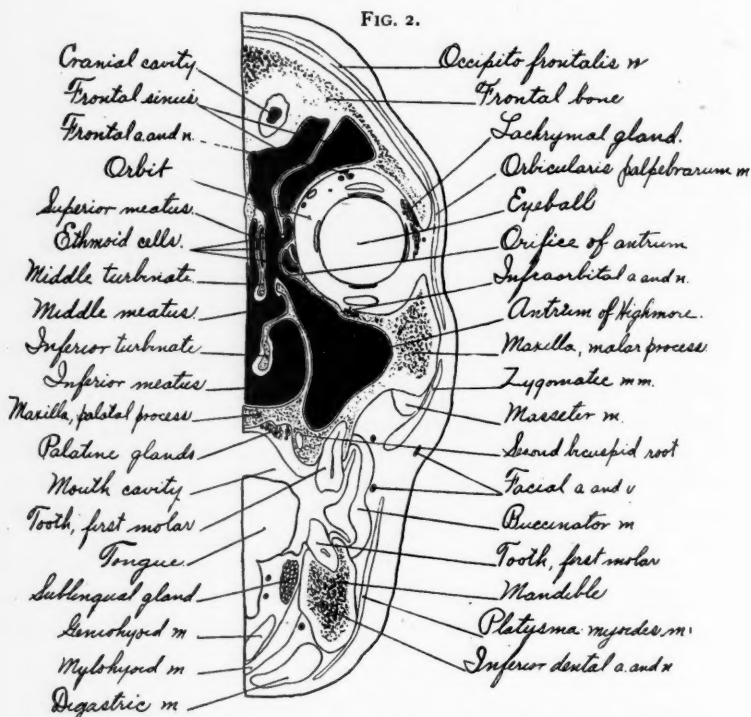
The fully developed antrum, which is not acquired before the eruption of the permanent teeth, is somewhat pyramidal in shape. The base corresponds to the nasal surface, the apex to the malar process and the other walls respectively to the facial, orbital, zygomatic and alveolar surfaces of the bone.

The base of the antrum in the disarticulated bone has a large irregular opening in its upper central portion. This opening is partly filled in by the ethmoid, palate and inferior turbinate bones in the articulated skull. In the recent state, the mucous membrane further reduces the opening which connects the antrum and nasal cavity. This opening is called the osteum maxillare. When the base of the antrum is projected upon the lateral nasal wall it corresponds to the central 3-5 of the inferior and middle nasal meatuses, the inferior and middle turbinates extending at least  $\frac{1}{2}$  cm. both anterior and posterior to the central cavity.

The osteum maxillare connects the uppermost portion of antral cavity with the lower portion of the hiatus semilunaris, a crypt of the lateral nasal wall. Into the upper portion of the hiatus semilunaris are the openings of the middle and anterior ethmoidal cells and of the frontal sinus. The hiatus is a slightly curved vertical slit, thus the openings of the ethmoidal and frontal cavities are directly over the antral opening and connected with it by a groove. Any discharge from these sinuses naturally collects in the antrum and has no escape until the antrum is almost completely filled. Fig. 2. Canfield, of Michigan, finds that in sixty per cent of the cases of antral diseases the other sinuses are also involved. In such cases cure of the antrum is hopeless until the ethmoidal and frontal sinuses have been cured and the antrum thoroughly drained.



The nasal duct passes vertically downward through the anterior part of the base to the inferior nasal meatus, into which it opens. Its opening is at least 4 cm. posterior to the tip of the nose and should be carefully avoided when operating upon the antrum



Represents a coronal section through the left lateral half of the head of an adult white male.

through the nasal cavity. To irrigate the antrum, Douglas passes his trochar into it from the inferior nasal meatus one inch posterior to the anterior end of the inferior turbinate bone. He cites one case in which the antrum was missed and the soft tissues of the face were infiltrated with the irrigation fluid.

The superior wall of the antrum is the floor of the orbit. It is triangular and has passing from behind forward the infraorbital groove and canal which convey the infraorbital vessels and nerve.

The infraorbital nerve gives off the middle dental nerves soon after entering the groove while the anterior dental nerves are given off just before the nerve emerges from the bone through the infraorbital foramen. The infraorbital artery while in the groove and canal gives off orbital, antral and anterior dental branches.

Viewed from within the antrum, the orbital wall is comparatively smooth except for a ridge passing from its central part forward and downward across the antero-superior angle to meet the anterior wall. This ridge corresponds to the infraorbital canal and occasionally its middle portion is completely separated from the antral wall. This orbital wall is usually very thin and frequently wanting in places so that only a muco-periosteum separates the orbital structures from the antral cavity.

The posterior wall is rounded and corresponds to the zygomatic surface of the bone. It forms the anterior wall of the sphenomaxillary fossa, which contains the third division of the internal maxillary artery and its branches, Meckel's ganglion and its branches and the posterior dental branches of the superior maxillary nerve. Near the center of this wall are the openings of the posterior dental canals into which pass the posterior dental vessels and nerves. Just before entering, the nerves give off gingival branches which pass forward and supply the external surface of the superior gingivae.

The antero-lateral or facial wall is rather heavy inferiorly where the roots of the teeth extend up into it, forming short vertical ridges upon the external surface. Above and lateral to the prominent ridge formed by the cuspid teeth is the canine fossa. Just below the central point of the infraorbital ridge is the infraorbital foramen through which emerge the infraorbital vessels and nerves. The anterior dental vessels and nerves pass down through this wall to the incisor and cuspid teeth. The most important of the soft structures superficial to this surface are facial vessels passing upward and mesialward across the face to the internal angle of the eye.

The best route for a radical operation upon the antrum is through the facial wall, the initial incision being made through the mucous membrane along its reflection from the first molar to the cuspid tooth. The advantages of this route are that it is the most accessible, the superficial soft tissues may be elevated from the bone, with-

out injury; the wall itself contains no important structure to be avoided, and the lowest part of the cavity is reached, thus giving the best drainage.

The alveolar wall usually corresponds to the molar and bicuspid teeth, rarely including the cuspid. In many cases the internal surface of this wall is very irregular, because of the teeth roots extending into it. In the white race, the bone is thinner than in the negro, the teeth roots are covered only by a thin lamina of bone and frequently only a muco-periosteum separates them from the antral cavity. This is why the pulling of a tooth sometimes opens into the antrum.

Septa of varying heights frequently extend upward into the cavity from the floor. These are practically always transverse and are undoubtedly caused by the retention of the septa of bone which separate the teeth follicles before the eruption of the teeth. The resorption of bone follows closely upon the descent of the teeth and thus are formed the pockets so frequently found in the floor. That there are more of the septa and pockets in youth than in old age has not been determined.

The floor of the antral cavity is from one-eighth to one-fourth inch below the nasal floor, so that thorough drainage cannot be obtained through the nasal cavity.—*Dental Brief*.

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REFLECTED SHADOWS ACCOMPANYING PORCELAIN FILLINGS. By C. N. Thompson, D.D.S., Chicago, Ill. In restoring the lost parts of teeth with porcelain inlays, an exact match in appearance is probably considered the most difficult part of the operation, the success of which depends upon the exactness with which we produce the natural conditions. But depending as we do upon materials that differ in physical properties to the extent that porcelain and cement do from the natural tooth, we are compelled to make use of certain artifices intended to offset the shade that falls as a result of the unnatural reflection, refraction, absorption, and transmission of light by these materials.

Color, of course, is a factor of great importance, and in itself would constitute an ample topic for an entire paper; but when we remember that it is quite impossible to invisibly repair a broken porcelain tooth by means of cement—in fact, almost impossible to even replace the fragment in any way so that the fracture will be

invisible—it would seem that color is not the only factor in the final appearance of finished porcelain fillings. The fragments being absolutely exact in color, translucence, form, and thickness, and the cement being of a good color, it is evident that aside from color there are other phases of the phenomena of light which affect the finished inlay detrimentally, unless forestalled. The only way in which the fragment of a broken tooth can be replaced—concealing the fracture—is to moisten both with some liquid of the same reflective index as the tooth, which in absolutely filling the space, cancels the reflective surfaces of the fracture, both internally and externally, thus permitting the light to proceed as it did before the break occurred.

*The Cement Problem in Relation to Color.*—Water answers admirably, but unfortunately it, like all other translucent substances of which we know, is of no practical value as a cement, so we are obliged to return to zinc oxyphosphate and its gloom, because it is *adhesive*. It may not be out of place to mention that although Ascher's enamel cement has practically no adhesive properties, and is consequently of no value in retaining inlays, its power of transmitting and reflecting light is so nearly equal to that of the natural tooth-enamel that certain shades of it interfere very little with the free passage of light, and it therefore comes very near being ideal in appearance. It is unfortunate that the good qualities of the cements mentioned cannot be incorporated into one—for a cement of the proper color, translucence, adhesiveness, and strength to fill all requirements, would mark the beginning of the end of the inlay question.

*Difference Between the Natural Tooth and Porcelain in Reaction to Light.*—A study of the normal tooth reveals the fact that its exact reproduction is impossible, yet to restore tooth-structure in appearance with porcelain without due consideration for the details of the make-up of the normal tooth is a mistake, for an examination of a cross section of the natural tooth reveals the enamel nearly transparent and the dentin nearly opaque. Compare this with a cross section of a porcelain tooth, and it is not hard to discover the reasons for some of our difficulties, as well as to know that there must be method in our efforts if we would secure results.

Dentin is so nearly opaque that it transmits light but feebly. Its

opacity seems to be due, as much as to anything else, to the condition of its external surface, which is without glaze—under the magnifier it seems rough, like fine sand-paper. The external surface stops the light as do crushed transparent substances generally—as for instance common salt—for the reason that the rays of light are so often reflected among the particles on the surface that they are scattered into a multitude of crossed reflections that appear white, and therefore cannot enter. Thus it follows that whatever surface will not admit light will also refuse to allow a reflected shade to pass; consequently if the dentin can be restored with a very high-fusing porcelain that becomes densest before it glazes, that presents a vitreous surface resembling sand-paper, and of the color of dentin, we have produced a foundation for the filling that will not absorb sufficient light to cause a shadow, and which, if not glazed by a subsequent baking, will still retain the power to arrest transmitted light, no matter how the colors and enamel are laid on afterward.

The only phase of color I shall mention is that of red. A pulpless tooth usually assumes a grayish aspect, probably due to the oxidation of the contents of the tubuli of the dentin, whereas there is something in a healthy tooth that gives it a lifelike appearance. We all know that the dentin immediately covering the pulp is pink, and if it be a fact from any cause that there is a red or pink tinge to the dentin close to and surrounding the pulp of a vital tooth, may it not be that the color of the normal dentin, if analyzed, would reveal red. Following this thought, it has been the custom of the writer to make use of red in deep cavities, laying a little of it on the matrix beneath the foundation body in the vicinity of the pulp, and the result produced warrants the supposition that red is present in vital teeth, and is necessary for the production of a lifelike filling.

Let us study the normal tooth filled with porcelain as it is seen in the mouth under normal conditions.

First, it is covered with moisture, which partly veils small mechanical defects, modifies the superficial, structural, and physical differences of the filling and tooth, fills the interspaces of the cement at the surface, and reflects a portion of the white light.

Next, through it we see the convex surfaces of the tooth and filling where another portion of the white light is reflected, and

where reflections from nearby objects begin to appear. The tooth-enamel is as though polished, differing from the glaze of the porcelain. However, all teeth are not alike in this respect; even those in the same mouth may differ. But seldom do we see natural tooth-enamel having as high a finish as well-glazed porcelain, and consequently it improves most porcelain fillings to polish that portion next to the labial cavity margin after it is set because it makes the surfaces more nearly alike. Comparing porcelain enamel with the natural structure, we find that it is not difficult to produce a substitute that resembles it in a general way—until its reflective and refractive powers are considered. Its translucence is very much the same as that of natural enamel, but as it is only a fused translucent crystal, covering the inner parts of the filling, it becomes an elliptical cavo-convex lens, with all the abortive phenomena which accompany such instruments. The natural enamel with its radiative arrangement of enamel rods whose refractive and reflective indices vary in accordance with their various positions, produces an entirely different instrument, for at the median line of the teeth the enamel rods point nearly toward the eye—those on the same perpendicular plane, while those on the sides are at right angles to the long axis of the tooth, which must produce a reversal of the reflecting index of each rod and consequently of the portion of the tooth which they occupy. This in the writer's opinion explains why an approximal gold filling appears not to darken its approximating neighbor, if it be a sound one, to the extent that it would if filled with porcelain, because natural enamel does not accept impressions as does the porcelain enamel, on account of the repeated reflections among the rods; also explains why the appearance of most approximal fillings are improved by a very thin layer of opaque white at and on a line with the contact point, or a trifle more to the labial on the approximal exterior, which prevents the passage of the reflected shade.

*Other Optical Principles Involved.*—As a consequence of the rectilinear motion of light, opaque bodies cast shadows, which fall as a result of some obstruction to the free passage of light, and their location, extent, and intensity are dependent upon the extent to which the light-rays are transmitted, reflected, refracted, or absorbed by the obstacle.

A shadow is partial darkness caused by the intervention of something between the space contemplated and the source of light. Reflected shade is that phase of the phenomena of light that affects porcelain inlays following final insertion.

All illuminated bodies scatter or reflect light, and are distinguished from each other by the kind and amount of light they send to us, their power of selective absorption and surface reflection determining the color. If the source of light be a point, as in the electric arc light, the shadow is sharply defined; if, on the other hand, it comes from a luminous surface, as the sun, the edges of the shadow are fringed and imperfect, due to the angular magnitude of the sun. For example the shadows of minute objects disappear almost immediately in sunlight, whereas the same objects in the arc electric light cast a well-defined shadow for a considerable distance if thrown upon a screen. This explains why porcelain fillings are more conspicuous in artificial light than in sunlight, the shadows thrown appearing more definite.

When light passes from one optical medium to another, a portion of it is always turned back, *i.e.* reflected. This partly explains why a highly glazed filling that does not appear correct may be improved by grinding or polishing. A slight roughening of its surface causes less direct exterior reflection, and although it thus renders the surface slightly more opaque, it renders the deeper coloring more prominent, because light is reflected regularly and more fully by a glazed surface.

One of the fundamental laws of optics is that the angle of incidence in light-rays is equal to the angle of reflection, which helps us to understand why the shadow that is thrown upon one object by another may be passed on and accepted as the real shade of the object thus thrown in the shadow, particularly when the shaded object is convex, as are the teeth—which greatly increases their range of power over the plane surface for accepting and reflecting impressions that occur at right angles to the perpendicular, as are the approximal surfaces of teeth, where shade is most apt to occur, and usually does, particularly if that surface be discolored, decayed, or filled. In any event, whatever shade exists in a given approximal space is reflected back and forth from one surface to the other until it reaches a point on the convexity of the tooth



that will reflect it to the eye, which establishes the limits of the shade at that point.

For example, a gold and a porcelain filling in contact between the central incisors: The porcelain filling, even though an exact match in color, will appear darkened as soon as placed in a cavity fronting a gold filling, because instead of returning the reflected shade to the gold again, its convexity sends the shadow of the gold to the eye, which gives it a saddened appearance. But if the filling be not scientifically constructed it will absorb a portion of the shadow and return it to the eye by internal reflection, which will make it appear still more darkened. To offset the discrepancy between artificial and natural enamel in transmitting impressions, it becomes necessary, in protecting approximal porcelain fillings against side shadows, to cover the approximal exterior of the filling fronting the shade with a thin layer of opaque white, which practically prevents shadows from entering the filling, thus allowing it to appear as intended, because it cannot reflect a shade that it does not receive.

Reflection always accompanies refraction, which phenomenon causes much of the uncertainty of results in laying on colors, because the enamel being translucent, light passes through it to the pigments, where color is established, and being returned to the eye by internal reflection, in emerging through the enamel it is refracted and reflected at both surfaces of the enamel, and scattered by its convexity. This, in a meager way, in connection with the fact that we cannot see our colors until after the filling is fused and finished, is the reason why the color problem is so mystifying.

A solid body immersed in a liquid having the same reflective index as the solid, vanishes, and light in passing through media of different refractive indices is always reflected, and this reflection may be so often repeated as to render two transparent substances practically impervious to light. An opaque white is produced in this way. The blackest clouds owe their gloom to this repeated reflection, which diminishes the transmitted light when seen from beneath; hence, also, their whiteness by reflected light. Common salt is white from the same cause, and transparent bodies generally, when crushed to a powder—because, though the par-

ticles transmit light freely, the reflections at their surface are so numerous that the light is scattered as is sound in echoes. A piece of glass is nearly transparent; crush it, and it becomes an opaque white; wet it, and it becomes semi-translucent. If it and the water were of the same reflective indices, the glass would disappear and the water would appear clear again. This partly explains why a filling of porcelain becomes a trifle more translucent, though a trifle darker after it is set, and becomes filled with moisture from the saliva; it also reveals one phase of the shadow that falls from the cement, in that the darkness of the cement is emphasized by the gloom produced by its repeated reflections in the body of the filling which retains it. It also suggests that the nearer a porcelain enamel can be based upon this plan—that is, two crushed crystalline substances of unequal refractive indices and of unequal fusing-points, the one to be suspended as it were, in the other, as is the crushed glass in water—the closer we will be to the production of an enamel that will come as close to nature as we could ever get, because while it would appear quite translucent, yet it would not transmit light as freely as some of our present enamels, and therefore would be more natural.

*Internal Shadows.*—The only rational plan for controlling internal shadows, which in the main are caused by cement, is to have the latter covered by the natural tooth, so outlining the cavity if possible that the eye will find tooth-substance interposed between it and the submerged cement—between the tooth and filling. Strictly labial cavities are of course not included in this statement, yet they are partially protected in another way, for most labial cavities occur upon the gingival third of the tooth-crown, and the enamel necessary to reproduce nature is very thin at that point. This permits a correspondingly greater amount of foundation body, that if properly made will not transmit much reflection from the cement below it, and the amount that it does show will depend upon how thick the enamel is, for it will transmit such reflection readily, allowing the cement to show through at the margins. Fillings made in this way are affected less by lip shadows than if the enamel be thick or the filling semi-translucent.

In approximal cavities it is usually possible to cut beneath the

labial plate, at least slightly, so that the submerged cement is hidden, as it were, below it, to the extent that light, in order to reach it through the filling, must strike the surface of the filling at such an angle that it would be reflected away, so that the tooth would be lighted by direct rays and appear as intended.

Definite shadows from cement imply that light, after being permitted to pass through the porcelain, must fall upon it, some of the light being absorbed, the diluted remainder being reflected back into the filling and returned to the eye direct, producing a saddening effect. Besides, reflection from the cement is increasingly darkened in proportion to the amount of porcelain the white light traverses in getting to it, and this applies likewise to the shadow.

When a filling is correct before cementation, and looks dead or leaden afterward, it is probable that its changed appearance is the result of light passing through several layers of semi-translucent color-pigment, each one selecting its portion of the white light, thus filling the light that reaches the cement with gloom, which, when reflected back through the filling, throws the whole into discord, producing a drab or gray—a color obtained by mixing the primary pigment colors. Such results are possible only when the filling transmits light too freely; because had the light been reflected back by the foundation body after penetrating the colors, as it should if correctly made, there would have been no light to reach the cement, consequently none to be reflected. Therefore the only detrimental effect that could be produced by the cement would be in rendering the filling more opaque and a trifle darker.

Fillings that appear correct from one direction and not from another are not sufficiently protected. This difference in appearance is due to reflected shade, which the faulty construction of the filling permits.

There is probably no way to entirely prevent shadows from being reflected into porcelain fillings, yet it is possible to confine both their extent and intensity to narrow limits, as follows:

First: By cavity formation, in order to conceal the submerged cement.

Second: By using a thin layer of opaque white on the approxi-

mal exterior of the filling that will prevent the entrance of reflected side shade.

Third: By making use of a foundation body of the same color and opacity as dentin, having an exterior surface which, being scintillant or faceted like the diamond, will act as a barrier to the passage of the light in the same way as does salt or crushed glass, which seems the only way of reproducing natural conditions as regards the phenomena of light.—*Dental Cosmos*.

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HELPLEFULNESS OF SOCIETIES. By H. L. Ambler, D.D.S., M.D., Cleveland, Ohio. This subject is always old and always new. It is always old because the foundation of dentistry rests on science and art, and the actual necessities of the human race. It is always new because we often find some new process which aids us in our daily practice—some one finds a sequel to what was only suggested in our early history, and we have been searching for it ever since. All of you can recall instances which bear out this statement, and we are on the eve of other sequels which will surprise and gladden you. Geologists say that this continent contains the oldest ridge of land which looked up through hissing waters to clouded sky, when the earth rose above the sea, and to it was given the opportunity of forming the first dental society of modern times—we say modern times, because it is a fair supposition that societies existed in Egyptian times: history tells us that in those ancient days (thousands of years ago) there were physicians for the teeth, and they naturally would do as we do now, meet together.

One of the greatest losses the world has ever met with was the destruction of the two Alexandrian libraries; if it had not been for these calamities the literature of dentistry would be richer and more abundant, and no doubt we should have the details about dental societies.

The American Society of Dental Surgeons was organized in New York City in 1840, and we, its children, are following in the footsteps of our illustrious predecessor. New York City has been called the cradle of American dentistry, largely because here originated the first society, and first dental journal (1839), and in Baltimore the child—the Dental College—was born in 1840, so Dr. Chapin A. Harris says, and he ought to know, for he assisted at the birth;

many years ago this child became of age, declared himself free and possessed of sufficient brains to exercise the power of franchise; ever since, in no uncertain voice, he has been speaking for himself so that he has been heard around the world.

To this old hemisphere belongs the credit of publishing the American Journal of Dental Science (1839), the first dental journal which at its fourth issue only had one hundred and seventy-four subscribers; truly, dentistry has made progress, and to push it along to greater achievements let us exert ourselves to increase our society membership. So long as we are in practice, we should never become so conceited as to think that we can get along just as well without the society. No one in dentistry, any more than in any other science, knows just how capable he is until he knows what the bright ones about him are doing, and we believe there is no other way as good and sure to find out as to attend societies.

Listening to the reading of a good paper acts as an inspiration, while seeing a good clinic inspires one to copy or improve on it; for example, a young man was watching an operation, and after it was completed he said: "Maybe I cannot duplicate it, but I will tell my brother, who is older, and more experienced, and I am sure he can."

Societies offer a post-graduate course to all who join. Physicians and surgeons who are ambitious for knowledge go to our great cities, and even abroad, to avail themselves of special opportunities in post-graduate work, thus spending much time and money; while right here at home any ethical dentist can have all the opportunities he wants for post-graduate work, because good societies are numbered by the hundred, and if he attends he will gain enough knowledge to more than compensate him for his effort.

Our patients are entitled to the best we can give them from the combined experience of many minds, and the quickest and easiest way to climb the ladder of progress is through the society, where something new and useful is seen, or heard about. A man must not live for himself alone, but for the good of his chosen profession; this is ingrain in the true professional man, and a duty which he ought to inherit from his forbears. Let it be said that no right-minded dentist is so egotistical as to care neither for his brother nor the society. It should be an unselfish interest which prompts the betterment of our professional brethren. Much of our indi-

vidual growth and reputation has been brought about by belonging to societies. Much of the enlargement and extension of the profession has been brought about by the interchange of valuable ideas. We know of many who have been active society members, and some of them have built up a good reputation and made a deep impress upon dental literature or technic, through their activity as society members. This is so plain a fact to those only a few years in the profession we wonder that so many hold aloof from our meetings. As an example of the faithful, loyal attendant we will mention our own Dr. J. Taft, who during fifty years gave about one-twelfth of his time and labor to society work, and he was always ready to accept any position conferred upon him. Who ever heard him try to get excused from society work of any kind? Who could want a more honorable reputation than he had? We hold him up as a shining example in this respect, and everybody knows that his influence was great for progress. The leaders are to be found in societies where they are at work, and work is in itself respectable unless it is proved to be wrong. The grumblers are to be found in their offices at rest, and rest is in itself suspicious unless it prove itself to be right. The grumblers say that societies, journals, colleges and laws are all wrong, and never were right, so they "wash their hands" of them all. There is power in co-operation as it is felt in the world of business, and in the professional world co-operation can make its power felt in the elevation, progression and benefits bestowed; consulting over cases, interchange of new ideas, presentation of new appliances and methods to simplify difficult operations and make new ones possible; thus both patient and operator are benefited. The opportunities for honorable professional methods are more possible now than ever before, and this has largely come about through the contact of man with man in societies, thus rounding them up to a polished surface and substantial growth. There may be a society without a profession, but there can be no profession without a society. Dental societies in this country and abroad have increased in number, and no one can doubt that they have been a most potent factor in the uplifting and upbuilding of the profession. Some think when they join a society that they have done all of their duty, and we believe that the majority do not stop to think about the management, or whether it is doing the best

possible thing for the generations to come. Could it be so that each one at some time would be placed as chairman of one of the more important committees, he would find out that there was some thinking to be done, and thinking is hard work; now if everyone will do a share of his brain and hand work, the quicker and easier will be the progress. Some join a society because it has something to offer them which they want, but they have not even thought of offering the society anything; now it is high time that this class should have their attention attracted to this statement, which we trust may lead them to try and do something for some society to which they belong. Indifference has broken hearts and killed nations, and even if we are prosperous now, unless the prosperity is kept moving by thinking and working men, it will lapse into decline. The indifferent say they cannot spare time to attend; they are self-sufficient; they have fallen in love with themselves; they generally have few dental books; they generally take few, if any, journals; they generally have some contention with other dentists; they generally tell you that "so and so" belongs to "such and such" a society, and that is enough for them; they do not care to join because they know he is a "bad man." It is on the same plan that some excuse themselves from joining a church. If we cannot keep up with the leaders of the dental times, we should surely keep in sight of them with our minds in a receptive condition. A few of the advantages offered by societies:

Growth.

Good-fellowship.

Grand ideas.

Go away from your office.

Go back encouraged.

Go to work and do better.

The time is at hand when we owe it to ourselves, our families, our brother practitioners and our patrons, to learn of all the new and good treatments and operations.

It is knowledge and skill which the world needs, and for which it is willing to compensate, and a large portion of the former can be gained at the society, and the latter can be developed in the office. Societies and colleges are the center of education, and that means leadership and government; they change the order of dental things, introduce new ideas and push them out into the



world; they eradicate the obsolete and put something better in its place; as the years go by they develop confidence and strength; they have been, and will be, on account of the "survival of the fittest," at the forefront in theory and work.

This is the golden age of societies, and many young men having been born in it and found so many societies at hand, do not fully realize what a grand opportunity they have to become learned and skillful men, as compared to the pioneers of several decades ago; anyone will more fully appreciate the present condition of dentistry if they will study the history of those times. Men of ambition, of creative and inventive power, of strong will force, know what it means to work, and when they achieve more or less fame they appreciate it; but there is no great success for a man if he live in himself, by himself, and for himself. "All the people know more than any one of the people," and on the very same line a dental society knows more than any one dentist.

"The human race is the individual of which men and women are only the cells or organs." The dental profession is the individual of which societies, journals and colleges are the cells or organs, constituting the great union of all, for all. Dental societies opened an important page in the history of the profession, and laid the foundation of the empire of dentistry so broad, wisely and deep that "time and tide" can never efface it; then let us highly resolve before we leave this hall that we will see to it that this society shall stand as a monument of energy in all the years to come.

—*Dental Summary.*

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CONTOUR AND OCCLUSION OBTAINED WITH CAST FILLINGS WITHOUT WAXING OR INVESTING. By A. M. Jackson, D.D.S., Macon, Ga. After securing a good matrix, thicken it with 22-k. gold solder. Then cut a strip of 22-k. or 24-k. gold plate one-sixteenth of an inch wide, and tack the end of the cervical margin of the matrix by re-flowing the solder. Place the matrix in position on the tooth, and with pliers bend the strip of gold to conform to the outline of the area with which the filling should come in contact. Burnish the margins of the matrix and remove it from the tooth. The result thus obtained is shown in Fig. 1.



To protect the matrix and to facilitate handling, a bit of investment material is used, as shown in Fig. 2.

The next step is the flowing of the 20-k. solder between the matrix and the outline band until the desired result is obtained, as shown in Fig. 3. One side of the inlay shown at Fig. 3 has been polished, but the other side is shown just as the soldering was completed, to show how the solder will cling to the outline strip.

FIG. 1.



FIG. 2.

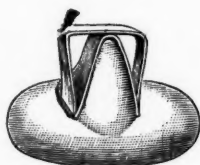


FIG. 3



FIG. 4.



Fig. 4 shows a single contour with the strip in position ready for the soldering. This little strip of gold may be used to contour or raise the cusps of bicuspsids or molars by means of cast fillings. A piece of iron wire, secured into the investment material at one end, is of great value as a means of handling during the final soldering.—*Dental Cosmos*.

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PLASTER IMPRESSIONS.—When taking a plaster impression I can readily tell whether I have a good impression or not, selecting a cup a little larger than the jaw and carrying the impression high over the cuspid eminence and over the tuberosities if they are prominent. I carry my impression high over the cuspid eminence for the reason that it is possible, as a rule, to wear the plate higher and make the artificial gum fuller to restore the expression lost by the extraction of the cuspid teeth. If the arch is high I place wax in the posterior margin of the tray. To hasten the setting of plaster, as most of the plaster that is used does not set quick enough, add a pinch of salt, but do not add salt until the plaster is mixed.—L. P. HASKELL, *Dental Review*.

# The Dental Digest.

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## Editorial.

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### THE INCREASING POPULARITY OF THE HIGH SCHOOL.

Since the high school is the general medium by which young men and women are prepared for entrance upon their professional studies, it is a matter of great satisfaction to those who are interested in dental education to know that the high schools of the country are increasing in popularity. Statistics show that the proportion of graduates from the graded schools to enter the high schools has been gradually increasing for several years. While it is doubtless true that this increase is, in a measure, due to the more favorable financial and industrial conditions of the country, yet it cannot be gainsaid that it is more largely attributable to the growing popularity of these schools, and this, in turn, is owing to the marked improvements in their courses of study.

The writer recently had the pleasure of visiting the Joliet high school, a magnificently constructed building, with modern equipped laboratories and an ideal ventilating plant. This school, though more elaborate than many, is representative of the progressiveness of the high schools of to-day, in which are given broad and practical courses in the arts and sciences. The commercial courses have been extended, and the increase in the number of elective studies is the means of keeping many young people at their books who would be leaving the high school but for this opportunity.

One of the most gratifying features, to us, is the manual training courses given in most of the high schools. These are taken by many young men who aim to work with their hands, and who, but for the existence of these courses, would have been forced

into the machine shop or factory on leaving the graded school.

Perhaps the greatest regret to those engaged in professional education, is the fact that the high school courses, in the various states, are by no means uniform; but they are all doing an excellent work for their young men and women, and it is not too much to expect that a more uniform course will soon be adopted by the National Educational Association.

We are pleased to note this increasing popularity of the high school and its broadening influence; for as a result we will have young men enter upon the study of dentistry who are trained to *read, think and investigate*. It has been truly said that the successful man is the one who thinks; and we will add, that success in any walk of life, is for energetic and thoughtful people, and that the cause of failure is lack of interest and laziness.

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### Notices.

#### BEAVER VALLEY (PA.) DENTAL SOCIETY.

The initial meeting of the Beaver Valley Dental Society was held at Freedom, May 16, 1907, and the following officers were elected: President, W. G. Cook, Beaver Falls; Vice-President, J. S. Wells, New Brighton; Secretary-Treasurer, H. C. Wearts, Beaver Falls.

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#### MISSISSIPPI DENTAL ASSOCIATION.

At the fourteenth annual meeting of the Mississippi Dental Association, held at Meridian, May 28, 29 and 30, 1907, the following officers were elected: President, L. A. Smith, Port Gibson; First Vice-President, J. F. Brunson, Meridian; Second Vice-President, Charles F. Boger, Natchez; Secretary, E. Douglass Hood, Tupelo; Corresponding Secretary, L. B. Price, Corinth; Treasurer, C. C. Crowder, Kosciusko. The next meeting will be held at Jackson.

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#### FLORIDA STATE DENTAL SOCIETY.

The twenty-fourth annual meeting of the Florida State Dental Society was held at Atlantic Beach, June 8, 1907. Officers for the ensuing year were elected as follows: President, A. S. York, Live Oak; First Vice-President, A. B. Philips, St. Augustine; Second Vice-President, George D. Young, St. Augustine; Treasurer, D. G. Barnett, Arcadia; Corresponding Secretary, Carroll H. Frink, Fernandina; Recording Secretary, R. P. Taylor, Jacksonville. Executive Committee—L. Colson, St. Petersburg; N. L.

Byan, Lakeland; J. R. Tomlinson, Lake City; W. A. Dean, Tampa, and Guy C. Estes, Palatka. The next meeting will be held at Tampa.

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#### SOUTH DAKOTA DENTAL ASSOCIATION.

The twenty-fifth annual convention of the South Dakota Dental Association was held at Sioux Falls, June 4 and 5, 1907, and the following officers were elected: President, A. L. Revell, Lead; Secretary, Ferd. Brown, Sioux Falls; Treasurer, J. W. Smoots, Beresford.

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#### EASTERN ONTARIO DENTAL ASSOCIATION.

The thirtieth annual meeting of the Eastern Ontario Dental Association was held at Gananoque, June 20, 1907, and the following officers for the ensuing year elected: President, E. A. McCordick, Ottawa; Vice-President, Dr. Black, Gananoque; Secretary-Treasurer, Will C. Davis, Morrisburg.

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#### DELAWARE STATE DENTAL SOCIETY.

The annual meeting of the Delaware State Dental Society was held at Wilmington, June 5, 1907. The election of officers resulted as follows: President, S. H. Johns; Vice-President, C. R. Jefferis; Treasurer, P. H. Keaveny; Secretary, Philip Traynor. Executive Committee—Drs. Jones, Kincaid and Buckmaster.

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#### UTAH STATE DENTAL SOCIETY.

The seventeenth annual convention of the Utah State Dental Society was held at Salt Lake City, June 7, 1907, and the following officers were elected: President, S. W. Wherry, Ogden; First Vice-President, J. H. Grant, Kaysville; Second Vice-President, W. G. B. Terrell, Salt Lake City; Secretary-Treasurer, S. C. Osgood, Ogden.

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#### COLORADO STATE DENTAL ASSOCIATION.

At the twenty-first annual convention of the Colorado State Dental Association, held at Colorado Springs, June 22, 1907, the following officers were elected: President, G. A. Dille, Denver; Vice-President, W. O. Brownley, Denver; Secretary Dr. Morton, Boulder; Treasurer, W. E. Smedley, Boulder. The next convention will be held in Boulder.

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#### ARKANSAS DENTAL ASSOCIATION.

The twentieth annual meeting of the Arkansas Dental Association was held at Eureka Springs, May 31, 1907, and the following officers were elected: President, P. A. Skeen, Texarkana; First Vice-President, R. R. Sadler, Paris; Second Vice-President, J. E. Andrews, Harrison; Secretary, L. K. Charles, Eureka Springs; Treasurer, W. T. Rowland, Bentonville; State Board, Dr. Richardson, Fayetteville; C. C. Simms, Dardanelle;

A. T. McMillan, Little Rock; Charles Bergstresser, Eureka Springs, and C. G. Farrow, Little Rock. Little Rock was chosen as the next place of meeting.

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#### NATIONAL ASSOCIATION OF DENTAL SALESMEN.

The second annual convention of the National Association of Dental Salesmen will take place at the Hotel Schenly, Pittsburg, Pa., July 8, 9, 10, 11, 1907. All reputable dental salesmen are cordially invited to be present.

JUDSON STACKHOUSE, Secy.

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#### WASHINGTON STATE DENTAL SOCIETY.

At the annual meeting of the Washington State Dental Society, held at Seattle, May 22, 1907, the following officers were elected for the ensuing year: President, R. A. Munro, Spokane; First Vice-President, J. K. Appleby, Everett; Second Vice-President, L. C. Stuart, Seattle; Secretary, S. A. Oliver, Spokane; Treasurer, S. I. Monk, Montesano.

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#### MONTGOMERY COUNTY (ILL.) DENTAL RESEARCH CLUB.

At a meeting of the dentists of Montgomery County, held in Hillsboro, June 16, 1907, an organization was effected, to be known as the Dental Research Club. Officers of the organization were elected as follows: President, B. F. Green, Nokomis; Vice-President, P. H. Winans, Hillsboro; Secretary, T. T. Baker, Litchfield; Treasurer, G. G. Garrison, Coffeen

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#### INTERSTATE DENTAL FRATERNITY.

The Board of Governors of the Interstate Dental Fraternity will convene for the annual business meeting of the order in Minneapolis, Minn., Monday, July 29, at the West Hotel. The annual banquet will occur during the week, and due notice thereof will be sent to the members as soon as arrangements can be made and the exact date fixed. It is hoped that the fraternity will meet in large numbers on this occasion.

R. M. SANGER, National Secretary,  
East Orange, N. J.

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#### VIRGINIA STATE DENTAL ASSOCIATION.

The Virginia State Dental Association will hold its annual meeting the 9th of September, 1907, at the Inside Inn, Jamestown Exposition. There will be only a short session, as the activities of our members are being merged with those of the Jamestown Dental Convention. This will be strictly a business meeting. No committees will be appointed, and no work done other than certain important matters of business, which will be designated later in a circular letter to be issued to each member.

W. H. PEARSON, Asst. Cor. Secy.,  
Hampton, Va.

## SOUTHERN WISCONSIN DENTAL ASSOCIATION.

At the tenth annual meeting of the Southern Wisconsin Dental Association, held in Lancaster, May 21, 22 and 23, 1907, the following officers were elected for the ensuing year: President, G. C. Marlow; First Vice-President, J. H. Reed; Second Vice-President, G. S. Knapp; Secretary, C. W. Collver; Treasurer, W. G. Hales. The next meeting will be held at Platteville, Wis.

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## KANSAS STATE DENTAL ASSOCIATION.

At the thirty-sixth annual convention of the Kansas State Dental Association, held at Topeka, May 29, 1907, the following officers were elected: President, W. A. Carter, Topeka; First Vice-President, L. D. Hodge, Arkansas City; Second Vice-President, Edward Bumgardner, Lawrence; Secretary, H. W. Fessenden, Ottawa; Treasurer, J. Scott Warner, Chetopa. Topeka was chosen as the next place of meeting.

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## KENTUCKY STATE DENTAL ASSOCIATION.

The thirty-seventh annual meeting of the Kentucky State Dental Association was held at Louisville, May 21, 1907, and the following officers were elected: President, McFerran Crow, Versailles; Vice-President, I. H. Harrington, Louisville; Secretary, W. M. Randall, Louisville; Treasurer, H. K. Kellogg, Louisville. The next meeting will be held at Indianapolis, Ind.

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## VERMONT STATE BOARD OF DENTAL EXAMINERS.

A meeting of the Vermont State Board of Dental examiners, for the examination of candidates, will be held at the State-house, Montpelier, Vt., July 1, 2 and 3, 1907, commencing at 2 o'clock of July 1. All applications, together with the fee, \$25.00, must be in the hands of the secretary not later than June 23. Application blanks and further information may be obtained from

GEORGE F. CHENEY, Secy.,  
St. Johnsbury, Vt.

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## NEBRASKA STATE DENTAL ASSOCIATION.

The thirty-first annual convention of the Nebraska State Dental Association was held at Lincoln, May 24, 1907, and the following officers were elected: President, M. E. Vance, Lincoln; Vice-President, D. A. Finch, Grand Island; Secretary, E. H. Bruening, Omaha; Treasurer, H. T. King, Fremont. Executive Council, three-year term—J. S. McCleery, Beatrice; J. H. Wallace, Omaha; C. E. Brown, Emerson. Two-year term—H. A. Shannon, Lincoln. One-year term—N. H. Morrison, Red Cloud. The following executive committee were appointed: E. H. Bruening, Omaha; C. E. Brown, Emerson; E. B. Damron, Lincoln.

## TEXAS STATE DENTAL ASSOCIATION.

At the twenty-seventh annual meeting of the Texas State Dental Association, held at San Antonio, June 18, 1907, the following officers were elected: President, A. A. Dyer, Galveston; First Vice-president, W. G. Collier, San Antonio; Second Vice-President, J. C. Julian Smith, Austin; Secretary-Treasurer, James G. Fifi, Dallas. The next meeting will be held at Dallas.

## NORTHERN OHIO DENTAL ASSOCIATION.

The fifteenth annual meeting of the Northern Ohio Dental Association was held at Cleveland, June 4, 5 and 6, 1907, and the following officers were elected for the ensuing year: President, Donald A. Allen, Toledo; Vice-President, D. H. Zeigler, Cleveland; Treasurer, S. B. Dewey, Cleveland; Corresponding Secretary, F. M. Casto; Recording Secretary, Burt Sanders, Elyria.

## WEST VIRGINIA DENTAL SOCIETY.

At the annual meeting of the West Virginia Dental Society, held at Clarksburg, May 15, 1907, the following officers were elected: President, H. H. Harrison, Wheeling; First Vice-President, C. H. Bartlett, Parkersburg; Second Vice-President, J. E. Dowden, Fairmont; Secretary, F. L. Wright, Wheeling; Treasurer, D. C. Clark, Blacksville. Next meeting to be held in Parkersburg.

## ODONTOLOGICAL SOCIETY OF CONNECTICUT.

The seventh annual meeting of the State Odontological Society was held at Bridgeport, June 18, 1907, and the following officers were elected: President, J. E. Beardsley, Bridgeport; Vice-President, L. D. Monks, New Haven; Secretary, G. H. Neubauer, Bridgeport; Treasurer, F. L. Uhle, Bridgeport; Executive Committee—L. T. Doolittle, New Britain; E. G. Ambernethy, Bridgeport; E. C. Curtis, New Haven.

## RESOLUTIONS OF RESPECT TO THE MEMORY OF DR. L. L. LESLIE.

*Resolved*, That in his death this Association has lost an efficient member and an esteemed worker for the promotion of dental standards and education.

*Resolved*, That we extend to his family our sincere sympathy and assure them of our admiration for his high personal and professional qualities.

*Resolved*, That these resolutions be spread on the records of the Association and a copy sent to the family of our departed member, and copies be sent to the dental journals for publication.

SOUTHERN WISCONSIN DENTAL ASSOCIATION { G. C. MARLOW, President,  
C. W. COLLVER, Secretary.

**DISTRICT OF COLUMBIA BOARD OF DENTAL EXAMINERS.**

The semi-annual examination of the Board of Dental Examiners of the District of Columbia will be conducted on July 1, 2 and 3, 1907. All applications for examination must be accompanied by a fee of \$10 and should be filed with

WILLIAM B. DALY, Secretary,  
1340 New York Ave., N. W., Washington, D. C.

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**OKLAHOMA DENTAL ASSOCIATION.**

The Oklahoma and Indian Territory Dental Associations were amalgamated at a meeting held at Oklahoma City, June 19, 1907, under the name of the Oklahoma Dental Association, and the following officers were elected: President, C. L. White, Oklahoma City; First Vice-President, C. W. Day, Vinita; Second Vice-President, R. O. Hirsch, Guthrie; Secretary, F. Q. Stickel, Muskogee; Treasurer, A. L. Nickerson, El Reno.

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**MASSACHUSETTS DENTAL ASSOCIATION.**

At the forty-third annual meeting of the Massachusetts Dental Association, held at Boston, June 5, 6 and 7, 1907, the following officers were elected for the ensuing year: President, George A. Savage, Worcester; First Vice-President, Ned A. Stanley, New Bedford; Second Vice-President, C. S. Hurlbut, Jr., Springfield; Secretary, Charles W. Rodgers, Dorchester; Assistant Secretary, Robert Whitehall, Cambridge; Treasurer, Joseph T. Paul, Boston; Editor, Carl B. Lindstrom, Boston.

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**MISSOURI STATE DENTAL ASSOCIATION.**

The forty-second annual convention of the Missouri State Dental Association was held in Kansas City, June 5, 1907, and officers for the ensuing year were elected as follows: President, J. W. Hull, Kansas City; First Vice-President, J. B. McBride, Springfield; Second Vice-President, R. E. Darby, Springfield; Recording Secretary, H. H. Sullivan, Kansas City; Corresponding Secretary, E. P. Dameron, St. Louis; Treasurer, J. T. Fry, Moberly. St. Louis was selected as the next place of meeting.

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**MICHIGAN STATE DENTAL ASSOCIATION.**

The annual meeting of the Michigan State Dental Association was held in Saginaw, June 6, 1907, and the following officers were elected: President, E. B. Spalding, Detroit; Vice-President, L. N. Hogarth, Detroit; Secretary, George H. Copp, Plainwell; Treasurer, J. W. Ardhouse, Grand Rapids; Trustees, W. R. Purmort, Saginaw; C. H. Worboys, Albion; George Zederbaum, Charlotte; J. W. Lyons, Jackson; J. H. Armstrong, Belding; G. C. Bowles, Detroit. The next annual meeting will probably be held on a boat en route from Detroit to the Soo and return.



## JAMESTOWN DENTAL CONVENTION.

The Jamestown Dental Convention will convene at Norfolk, Va., September 10-12, 1907.

*Committee on Organization.*

Burton Lee Thorpe, Chairman,	H. Wood Campbell, Secy.,
305 North Grand Ave.,	Suffolk, Va.
St. Louis, Mo.	F. W. Stiff, Treasurer,
R. H. Walker, Norfolk, Va.	Richmond, Va.
Thos. P. Hinman, Atlanta, Ga.	J. E. Chace,
	Ocala, Fla.

Clarence J. Grieves, Baltimore, Md.

*Officers.*

Honorary President, J. Y. Crawford, Nashville, Tenn.  
 President, V. L. Turner, Raleigh, N. C.  
 First Vice-President, B. Holly Smith, Baltimore, Md.  
 Secretary General, George F. Keesee, Richmond, Va.  
 Treasurer, Mark F. Finley, Washington, D. C.  
 Chairman of the general clinic committee, Clarence J. Grieves, Park and Madison avenues, Baltimore, Md.

Chairman of the general membership committee, F. W. Stiff, Richmond, Va.

The essayists of the meeting are as follows: Prof. W. D. Miller, of Berlin, Germany, subject, "Demonstrations of Preparation Relating to the Wasting (so-called Erosion) of the Teeth;" Dr. Chas. L. Alexander, Charlotte, N. C., subject, "Gold Inlays;" Dr. F. T. Van Woert, Brooklyn, N. Y., subject, "Is the Cemented Filling, the Filling of the Future?" Dr. R. Ottolengui, New York, subject, "The Purposes and Accomplishments of Modern Orthodontia."

The clinics and exhibits at the Jamestown convention are to be its interesting features.

*Manufacturers Exhibit.*

The Committee on Manufactures Exhibit, Dr. John W. Manning, Norfolk, Va., will show the latest and best dental instruments, appliances, machinery, furniture and materials.

*Orthodontia Exhibit.*

Dr. Harry E. Kelsey, Chairman, Baltimore, Md.

The committee on orthodontia exhibit expects to have displayed at the Jamestown Dental Convention the best and most complete collection obtainable in the country, of models and appliances illustrating the treatment of the various classes of orthodontia cases. The committee also hopes to have exhibited rare and valuable collections illustrative of the progress of the science of orthodontia, from its beginning down to the present day, thus adding an historical feature to the display. The rare and valuable collection of models of the American Society of Orthodontia has already been secured, and several of the most prominent orthodontists of the country have promised to contribute. In addition to this, Dr. R. Ottolengui will read a paper before the general body on "The Angle Method in

Orthodontia," which will be a paper reviewing and comparing the best in all methods to date.

*Surgical Clinic.*

Dr. L. M. Cowardin, Chairman, Richmond, Va.; Dr. J. Y. Crawford, Nashville, Tenn.; Dr. A. G. Fredericks, New Orleans, La.

Under this head a number of important surgical operations of the mouth, face and jaw will be performed. Among the well-known operators who have signified their intention to operate are Drs. G. V. I. Brown, Milwaukee, Wis.; W. A. Bryan, Nashville, Tenn.; William Perrin Nicolson, Atlanta, Ga.; B. Holly Smith, Baltimore, Md.; V. P. Blair, St. Louis, Mo.; Frederick B. Moorehead, Chicago, Ill.; Randolph Winslow, Baltimore, Md.

*Committee on Comparative Odontology.*

Dr. Wm. Bebb, Chairman, Los Angeles, Cal.; Dr. A. H. Thompson, Secretary, Topeka, Kan.

In this exhibit there will be about two thousand specimens, illustrating Comparative Odontology, together with a number of pathological specimens, showing the effects of Rickets, Actinomycosis, etc., upon the teeth and the bones of the face. The latter are probably the most interesting feature of the collection.

There will be specimens dissected to show the attachment and development, others displaying the skin, skull and teeth of the various animals, together with a number of extracted teeth of mammals. The invertebrates, fishes, reptiles, and birds will be represented by their food reducing organs. A number of human skulls will be displayed, together with a collection of pathological human teeth. The collecting, preparation and mounting of the specimens of Dr. Wm. Bebb, all of which has been done by the exhibitor, is a feature of the exhibit which will be of interest to many. The pathological specimens, which may possibly have some bearing upon human dental pathology, are the most interesting part of the collection to the average dental student, and in this respect the Bebb collection is unique, in having a larger number of these than any other known of. The ones Dr. Bebb collected himself are certainly more authentic than any which might be obtained from a commercial collector. This collection was exhibited at the Portland Dental Congress and received the hearty praise of all those who saw it.

*The U. S. Naval Dental Exhibit.*

Dr. Richard Grady, Chairman, Annapolis, Md.

The U. S. Naval Dental Exhibit will include many hundreds of charts of the teeth of young men from 16 to 24 years of age, from all parts of the country, showing at a glance, and far more impressively than printed words could ever do, teeth filled, crowned, treated, extracted, unerupted, irregular, etc.; also the size of cavity on individual surfaces of teeth; also kind of filling, or crown or bridge.

The character of the work, if gold, is designated with gold paint; if amalgam, with aluminum paint. Much valuable information is to be found

in memoranda of anything of special importance, malformation and malposition of teeth and jaws, mechanical injuries to teeth and jaws, polypus of pulp, pyorrhea, erosions, stains, reflex, pains, regulating appliances, painful and difficult eruption of third molars, etc. The records, showing where caries is localized, extend over a period of years, and it is hoped that some day this store of recorded dental knowledge will be tabulated and the results of observation and study brought before the profession as scientific questions for consideration and interpretation. While the charts are simple, official records of the peculiarities of the teeth and of the operations performed upon them, yet they have furnished reliable evidence in several cases of drowning, as the teeth maintained their features and peculiarities when other external signs were wanting in establishing personal identity. A summary of the relative frequency of dental caries after 16 years of age (and before in permanent teeth), with number of teeth present, fillings, crowns and bridges, will also be exhibited.

*Committee on Dental History.*

Dr. Wm. H. Trueman, Chairman, Philadelphia, Pa.; Dr. Chas. McManus, Secretary, Hartford, Conn.

This exhibit will show a collection of photographs, early certificates and diplomas, portraits of distinguished practitioners, collections of ancient dental instruments, and specimens of dental prosthetic skill, porcelain works, etc. A photograph of title pages of early American dental literature, books and journals, etc. The committee on history will also prepare a report on the contribution of pioneer southern dentists, dental colleges and societies of the southern states. This will be published in the Proceedings.

For further information address

H. W. CAMPBELL, Secy.,  
Suffolk, Va.

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NATIONAL DENTAL ASSOCIATION.

The eleventh annual meeting of the National Dental Association will be held in Minneapolis, Minn., July 30 to August 2, 1907.

In many ways this promises to be the most interesting and important meeting in the history of the Association, and as it has been some years since a meeting of the National was held in this section of the country, it is confidently expected that the attendance will surpass that of any previous session.

The general sessions of the Association will be held in the First Baptist Church, corner Tenth Street and Harmon Place, and it is proposed by the program committee, in consequence of a prevailing sentiment, that all papers be read, so that the entire membership may have an opportunity to hear and discuss them. Only one section, therefore, will be in session at the same time.

There will be sufficient time allowed in carrying out the program so that each section will have two sessions of at least three hours' duration, which should be ample to complete the work.

Membership in the Association is open only to delegates from state societies, yet a most cordial invitation is extended to all reputable practitioners to attend the meeting.

Reduced rates on all railways, except in Minnesota, on the certificate plan, of a round trip for a fare and a third, has been secured, full details of which will appear in the official announcement.

Hotel Plaza has been designated as headquarters for the Association, while the clinics and dental exhibit will be held at the National Guard Armory on Sixteenth Street. Hotels and rates are as follows:

The Plaza, \$2.00 per day and upward. European plan.

The West, \$1.00 per day and upward. European plan.

The Nicolett, \$1.00 per day and upward. European plan.

The Majestic, \$1.00 per day and upward. European plan.

For hotel reservations, etc., address the chairman of the local committee of arrangements, F. B. Kremer, Masonic Temple, Minneapolis, Minn.

Minneapolis and vicinity is one of the most interesting and beautiful sections of our country and particularly so at this season of year and, in addition to this, our local committee of arrangements is planning many features of interest for the entertainment and convenience of all, and it is the earnest wish and expectation of the officers of the Association that there shall be a large attendance at the meeting.

The following is the program as far as completed:

#### SECTION I.

Dr. L. C. Bryan, Basle, Switzerland—"The Over-arch-bar in Bridge Work."

Dr. Emory A. Bryant, Washington, D. C.—"Some Practical Experiences Theoretically Expressed."

Dr. Guilhermena P. Mendell, Minneapolis, Minn.—"Treatment of Mal-Occlusions of the Deciduous Teeth."

Dr. Charles L. Hungerford, Kansas City, Mo.—"Evolution."

Dr. Marcus L. Ward, Detroit, Mich.—"The Effect of Excesses of Mercury upon Shrinkage, Expansions, Edge-strength, Flow, Change in Composition and Stability of the Dental Amalgam Alloys."

Dr. C. M. Work, Ottumwa, Iowa—"Porcelain, the Cavity and the Matrix."

Dr. F. G. Corey, Council Grove, Kan.—"Physical Conditions of, or Pertaining to the Human Teeth."

Dr. J. V. Conzett, Dubuque, Iowa—"Method of Replacing Broken Facings on Crowns and Bridges."

DR. E. P. DAMERON, Secy.,	DR. D. O. M. LE CRON, Chairman,
St. Louis, Mo.	St. Louis, Mo.

#### SECTION II.

Dr. Carroll H. Frink, Fernandina, Fla.—"An Original Method of Casting Gold Inlays." (Illustrated with India Ink Drawings and Models showing technique.)

Dr. L. G. Noel, Nashville, Tenn.—"Modern Methods of Combining Co-

hesive Gold with Non-cohesive Gold, with Tin and with Tin-gold."

Dr. Thomas B. Hartzell, Minneapolis, Minn.—"Physical Characteristics and Surgery of Pyorrhea."

Dr. G. O. Orr, Jordan, Minn.—"The Functions of the State Dental Society."

Dr. Charles McManus, Hartford, Conn.—"Dental Literature."

Dr. J. J. SARRAZIN, Secy.,

New Orleans, La.

Dr. WM. CRENSHAW, Chairman,

Atlanta, Ga.

#### SECTION III.

Dr. Victor C. Pedersen, New York City—"Buccal Manifestations of Syphilis."

Dr. Herbert L. Wheeler, New York City—"The Prevention of Disease of the Mouth and Teeth by Proper Oral Prophylaxis in the Young."

Dr. Truman W. Brophy, Chicago, Ill.—"Anatomy of the Palate—Normal and Cleft."

Dr. Joseph Head, Philadelphia, Pa.—"Prophylaxis with Special Reference to the Wisdom Teeth."

Dr. Robert T. Oliver (U. S. A. Dental Corps)—"Dental and Oral Lesions of Leprosy."

Dr. Arthur H. Merritt, New York City—"Mouth Infection the Cause of Systemic Disease."

Dr. M. L. RHEIN, Secy.,

New York City.

Dr. WM. CARR, Chairman,

New York City.

In addition to the above the largest and most varied Clinic the association has ever held will be given on Wednesday and Thursday.

Dr. C. S. BUTLER, Secy.,

Buffalo, N. Y.

Dr. A. H. PECK, President,

Chicago, Ill.

#### NATIONAL DENTAL ASSOCIATION CLINIC.

The headquarters in Minneapolis will be the Plaza Hotel. The clinics will be held in the Armory, one-half block from the hotel.

The clinic will be the largest the National has ever held. There will be sixty-five practical operations on Wednesday, July 31, and the same number of operations on Thursday, August 1.

About forty of these one hundred and thirty operations will be the making and placing of inlays. The remainder of the operations will be divided into gold, amalgam, tin, cement, and gold and tin fillings, the removal of calculus, the administration of local anesthetics, etc.

Dr. W. N. Murray of Minneapolis will have charge of the inlay section.

Dr. F. S. Yeager of St. Paul will have charge of the table clinics.

Dr. W. A. Grey of St. Paul will have charge of the surgical clinic, of which there will be a number.

All of these men will appoint their own corps of assistants.

Drs. Carlson, Cox, Wells, Wilson and myself will be in the clinic room and we shall do everything possible to assist the operators.

After using considerable persuasion, Dr. J. B. Ridout of St. Paul has

agreed to give a blow-pipe demonstration. It is well worth making a trip from New York to Minneapolis to witness this clinic. I am able to unhesitatingly endorse the demonstration which Dr. Ridout will give, for I feel that it will be one of the most interesting and attractive of all the table clinics.

Dr. Bryan and Dr. Muller of Switzerland are journeying to the meeting with some things in the mechanical line which they feel are all important and of the greatest value for everybody to see.

The program at present contains the names of the following gentlemen who will make operations:

*Surgical Clinic.*

W. H. G. Logan, Chicago.

W. H. De Ford, Des Moines, Ia.

L. F. Luckey, Birmingham, Ala.

*Inlay Section.*

R. H. Volland, Iowa City, Ia.

J. Q. Byram, Indianapolis, Ind.

C. H. Farrand, La Crosse, Wis.

L. C. Elkins, St. Augustine, Fla.

F. H. Bimrose, Butte, Mont.

C. A. Sevier, Jackson, Tenn.

C. M. Work, Ottumwa, Ia.

A. G. Fee, Superior, Wis.

W. H. Cudworth, Milwaukee, Wis.

F. R. Fisk, Spokane, Wash.

J. E. Meyers, Minneapolis, Minn.

G. W. Schwartz, Chicago.

W. C. Pike, Minneapolis, Minn.

J. D. Park, Duluth, Minn.

T. W. Russell, Minneapolis, Minn.

A. A. Jennings, Milwaukee, Wis.

A. E. Peck, Minneapolis, Minn.

S. J. Pattison, Fargo, N. D.

F. B. Kremer, Minneapolis, Minn.

P. B. McCullough, Philadelphia, Pa.

J. O. Wells, Minneapolis, Minn.

C. G. Von Suessmilck, Duluth, Minn.

W. N. Murray, Minneapolis, Minn.

A. T. Reeves, Selma, Ala.

W. J. Brownlee, Devils Lake, N. D.

C. H. Seeger, Manitowoc, Wis.

*Other Operations.*

H. J. Beemer, Newton, N. J.

O. C. Zieger, Owatonna, Minn.

J. J. Booth, Marion, Ia.

G. N. Beemer, Mason City, Ia.

E. S. Brown, Edina, Md.

C. N. Booth, Cedar Rapids, Ia.

F. Bernard, Kenneth Square, Pa.

A. D. Black, Chicago.

J. V. Conzett, Dubuque, Ia.

T. F. Cooke, Burlington, Ia.

W. G. Crandall, Spencer, Ia.

W. R. Clack, Clear Lake, Ia.

Wm. Finn, Cedar Rapids, Ia.

A. C. Fawcett, Rochester, Minn.

J. W. S. Gallagher, Winona, Minn.

C. J. Grove, St. Paul, Minn.

C. L. Gunn, Gadsden, Ala.

L. Greenbaum, Philadelphia, Pa.

T. B. Hartzell, Minneapolis.

G. S. Handy, Natchez, Miss.

F. A. Hardgrove, Fondulac.

P. H. Jones, Clear Lake, Ia.

F. S. James, Winona, Minn.

W. B. James, Tracy, Minn.

W. O. Lovett, Brewton, Ala.

A. M. Lewis, Austin, Minn.

C. B. Miller, Cedar Falls, Ia.

H. R. Mavis, Minneapolis, Minn.

W. H. K. Moyer, Little Falls, Minn.

G. D. Moyer, Montevideo, Minn.

S. G. McCallin, Chicago.

F. N. Owens, St. Paul, Minn.

C. H. Oakman, Detroit, Mich.

A. E. Owre, Minneapolis, Minn.

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|--------------------------------------|-------------------------------------|
| J. B. Pherrin, Central City, Ia.     | W. S. Pugh, Mobile, Ala.            |
| F. S. Robinson, Chippewa Falls, Wis. | W. J. Reynolds, Selma, Ala.         |
| F. G. Richardson, Mason City, Ia.    | C. H. Robinson, Wabasha, Minn.      |
| G. W. Slingluff, Burlington, Ia.     | A. C. Searl, Owatonna, Minn.        |
| Alice M. Steeves, Boston.            | F. G. Van Stratum, Hurley, Wis.     |
| J. F. Wallace, Canton, Mo.           | C. E. Woodbury, Council Bluffs, Ia. |
| P. H. Wright, Oxford, Miss.          | T. J. Yerke, Owatonna, Minn.        |

The following gentlemen have signified their intention of holding

*Table Clinics:*

- |                                     |                                   |
|-------------------------------------|-----------------------------------|
| J. E. Argue, Red Lake Falls, Minn.  | L. C. Bryan, Basel, Switzerland.  |
| A. P. Burkhardt, Buffalo, N. Y.     | G. A. Bowers, Nassau, N. H.       |
| H. L. Cruttenden, Northfield, Minn. | W. S. Curtis, Montpelier, Vt.     |
| J. C. Corcoran, St. Paul, Minn.     | J. P. Carlisle, Greenville, S. C. |
| I. N. Carr, Durham, N. C.           | F. E. Dodson, Grand Rapids, Mich. |
| C. H. Frink, Fernandina, Fla.       | W. N. Fine, Philadelphia, a.      |
| W. L. Fickes, Pittsburg, Pa.        | E. A. Honey, Kalamazoo, Mich.     |
| G. F. Hauser, La Crosse, Wis.       | J. A. Hall, Collinsville, Ala.    |
| F. R. Houston, Green Bay, Wis.      | G. F. Jernigan, New York, N. Y.   |
| C. W. Jones, St. Paul, Minn.        | J. L. Kelly, St. Paul, Minn.      |
| C. H. Land, Detroit, Mich.          | C. W. Lokey, Talladega, Ala.      |
| Eugene Müller, Zurich, Switzerland. | W. H. MacNeil, Minneapolis, Minn. |
| G. C. Marlow, Lancaster, Wis.       | C. P. Peterson, Mankato, Minn.    |
| F. A. Peese, Philadelphia, Pa.      | J. B. Rideout, St. Paul, Minn.    |
| J. W. Ritter, Charleston, Ill.      | C. F. Rodolf, Muscoda, Wis.       |
| E. F. Summermeier, Eau Claire, Wis. | A. C. Steuerwald, St. Angars, Ia. |
| S. S. Stowell, Pittsfield, Mass.    | A. J. Sawyer, Manchester, N. H.   |
| E. F. Tinker, Wheatland, Ia.        | M. L. Ward, Detroit, Mich.        |
| O. A. Weiss, Minneapolis, Minn.     | J. D. Wise, West Point, Miss.     |

This constitutes the clinic up to date. But three chairmen have reported from their states. There will be many more names to add to this program when the rest of the reports are received.

E. K. WEDELSTAEDT, Chairman Clinic Section.

New York Life Bldg., St. Paul, Minn.

LATEST DENTAL PATENTS.

- 848,001. Head-rest for barber and other chairs, Eugene Berninghaus, Cincinnati, Ohio.
- 848,334. Combination dental plugger, Percy E. Williams, Savannah, Ga.
- 848,403. Dental obtunder, Perry R. Skinner, Amsterdam, N. Y.
- 848,406. Tooth-pick machine, Willis W. Tainter and C. P. Stanley, Dixfield, Mo.
- 848,693. Tooth-pick holder, Charles H. Sharp, Lockport, N. Y.
- 848,863. Reinforce and Backing for artificial teeth, Isidore Stern, New York, N. Y.
- 849,208. Dental handpiece, Lyter H. Crawford, New York, N. Y.

- 849,209. Combination mouth mirror and lamp, Lyter H. Crawford, New York, N. Y.
- 849,297. Dental swaging device, George J. Weber, Liberty Center, Ohio.
- 849,335. Electric dental furnace, Lewis Markwitz, San Francisco, Cal.
- 849,595. Head-rest for barbers' chairs, Benjamin F. Buchanan, Camden, N. J.
- 849,702. Guard and Moistener for dental tools, Charles A. Sevier, Jackson, Tenn.

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### News Summary.

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- E. E. RUST, a dentist of Monroe, Wis., died May 28, 1907.
- T. F. SKEEDE, a former dentist of Seward, Neb., died May 11, 1907.
- CLARK COLE, a young dentist of Herkimer, N. Y., died June 21, 1907.
- H. S. JOSLIN, 75 years old, a dentist of Bristol, Vt., died May 23, 1907.
- OLIVER COLBURN, a pioneer dentist of Big Rapids, Mich., died June 7, 1907.
- ROBERT JAMES MORTON, a young dentist of Hamilton, Ont., died, June 1, 1907.
- AUSTIN J. MORRIS, 56 years old, a dentist of Indianapolis, Ind., died, June 13, 1907.
- ALBERT T. LULL, 85 years old, veteran dentist of Nashua, N. H., died June 10, 1907.
- WILLIAM I. HERVEY, 37 years old, a dentist of Lowell, Mass., died from pneumonia, May 20, 1907.
- W. H. MORRIS, 28 years old, a dentist of Manitowoc, Wis., died of tuberculosis, June 20, 1907.
- WALTER F. WEEKS, 33 years old, a well-known dentist of Sayre, N. Y., died of pneumonia, June 2, 1907.
- W. P. COOL, 57 years old, a practicing dentist of San Francisco for over thirty years, died June 22, 1907.
- ORRIN Q. SHAPLEIGH, 66 years old, for forty-five years a dentist of Somersworth, N. H., died June 18, 1907.
- J. L. BINGHAM, 56 years old, a well-known dentist of Chicago, died from nervous prostration, June 1, 1907.
- J. D. LOETZERICH, one of the leading dentists of Pine Bluff, Ark., died from a surgical operation, June 2, 1907.
- BENJAMIN SANDERS, 75 years old, for forty-five years a dentist of New York City, died of heart failure, May 24, 1907.
- WILLIAM M. ROBERTS, 49 years old, formerly a dentist of Springfield, Mass., died at North Yakima, Wash., June 10, 1907.
- THOMAS PALMER, 86 years old, until his retirement, three years ago, a practicing dentist of Fitchburg, Mass., died, June 18, 1907.



J. B. BEAUMAN, 79 years old, one of the oldest dentists in Ohio, having practiced in Columbus for nearly sixty years, died in that city, June 18, 1907.

DENTIST COMMITS SUICIDE.—Howard L. Tripp, a dentist of Cleveland, O., suffering from paralysis, killed himself June 11.

ALUMINUM WASHERS. Aluminum plate makes washers where you want a close joint. It is better than lead on a vice where you wish to protect what you are gripping.—*Dental Cosmos*.

A VERBAL DIFFERENCE.—The difference between having a tooth drawn by a professional man and having it knocked out by a fall on the pavement is only a verbal one. The one is dental, the other accidental.

CHEERFULNESS.—Beneath the grease-paint of the comedian there often beats a sodden heart. Duty compels, and the merry jest and fling goes on—and perhaps it is better so.—R. B. TULLER, *Amer. Dent. Jour.*

INCREASE IN DENTISTS.—Since 1880 the increase in the number of dentists in this country has been over 900 per cent. Properly worked, there is no better gold mine in the country, evidently, than the human mouth.

BANKRUPT.—A petition asking that the Archer Manufacturing Company of Rochester, N. Y., be adjudged bankrupt has been filed with the referee in bankruptcy. The Archer company manufactures dental and barber supplies.

DEFECTIVE TOOTH DEVELOPED CANCER.—John Whittaker, 55 years old, of Benham, Ind., died June 12 of cancer, caused by a defective tooth. The trouble began a year ago. He submitted to two operations which failed of relief.

HIGH IDEALS.—There may be some men who think that their particular calling is for the material welfare, and that is not to be ignored, but the highest ideal should be that of service to mankind.—C. E. BENTLEY, *Dental Review*.

THE GREATEST VALUE OF CEMENTS.—The development of the porcelain inlay has practically done away with the necessity for using cement as a filling material for the sake of appearances, and its greatest value now seems to be as a lining, retentive or otherwise, under metallic fillings.—F. L. PLATT, *Pac. Dent. Gazette*.

OBTUNDING SENSITIVE DENTIN IN GINGIVAL CAVITIES.—Prepare a saturated solution of thymol in alcohol. Take pledget of cotton (size of cavity) and immerse in liquid, then slightly warm same over alcohol lamp and place in the cavity. Retain this in the cavity with pliers, and with hot-air syringe throw warm air on cotton until the preparation has become

evaporated. Remove and proceed with the shaping of cavity, which you will find can be successfully performed, inflicting little or no pain upon patient. Try it and be convinced.—F. J. MOYER, JR., *Dental Summary*.

INLAYS.—The more I have to do with inlay work the more I find a properly constructed inlay, with two or three small pins running into the tooth, seems to furnish a stronger attachment to that tooth than a crown made with a band.—W. H. TAGGART, *Dental Review*.

CHARACTER.—After all has been said there is only one main object in life—the building of character. Character is the result of cultivation of the highest and noblest qualities and putting them into practical usefulness for the betterment of our fellows.—E. MAWHINNEY, *Dental Review*.

CHINESE CONSULTING ROOM.—The consulting room of the Chinese practitioner or dentist is a booth or tent at a street corner or in a court of a temple; you know it by the long strings of extracted teeth that hang up. On one string I noticed two pieces of jaw bone that were not very reassuring.—S. D. BOAK, *Dental Summary*.

TOBACCO SMOKE IRRITATING.—Tobacco smoke is a chronic irritant to the buccal cavity, upon which, according to its power of resistance, the mucous membrane reacts more or less strongly. A usual and ordinary consequence of intense tobacco smoking is the chronic catarrh of the mucous membrane and of the pharynx.—H. BÖMECKEN, *Quarterly Circular*.

AMALGAM FILLINGS.—Amalgam, within its legitimate range of employment, is serviceable or otherwise according to the preparation of the cavity and the manipulation and subsequent finish of the filling. In other words, amalgam is more seriously affected by faulty methods of manipulation than is usually granted.—C. N. JOHNSON, *Dental Review*.

ONE CAUSE OF DENTAL CARIES.—I am inclined to think that much of the decay of teeth comes from the food in cold storage which is in the first and second stages of decomposition. I do not believe we get the proper assimilation of such foods and that lots of the trouble in our patients is systemic if we can only get at the cause.—J. E. HINKINS, *Dental Review*.

ILLEGAL PRACTITIONERS.—Warrants were issued for five Pittsburg dentists as illegal practitioners, May 28.—The state board of health of Connecticut has started a campaign against "quack doctors." An Italian of New Haven, claiming to be a graduate of a college in Palermo, Italy, has dropped his practice and it is said there will be action against practitioners elsewhere before long.

ACCIDENTS.—By an explosion of gasoline in the office of Dr. R. G. Williams, Illmo, Mo., June 15, the doctor was severely burned about the face and head and two buildings destroyed.—June 7, F. C. Jarvis, a dentist of Benton Harbor, Mich., was badly burned by the explosion of a vulcanizer.—June 9, Frank Gehrung, a dentist of North Attleboro, Mass., was seriously injured by being thrown from an automobile, suffering three fractured ribs, a broken nose, dislocated wrist and other injuries.—May 17, A. C.

Peck, a dentist of Naugatuck, Mich., lost about \$500 worth of gold bridge work by being broken and warped from the heat of a blaze caused by the explosion of an alcohol lamp.

**DENTIST AGAIN GETS OFF FREE.**—A. J. McDavit, a dentist practicing in San Bernardino, Cal., had his fourth trial on the charge of practicing dentistry without a license or diploma and the jury disagreed. Dr. McDavit acknowledged having no license, but claims he applied for one and was refused, as he lacked certain qualifications which he considers unreasonable, and that is what has caused the fight.

**FIRES.**—D. F. Wilson, Morrilton, Ark., June 1, loss \$1,500, insurance \$800.—G. W. Sweigart, Hartford City, Ind., in May, loss adjusted at \$30.—D. S. Tilton, Belleville, N. J., June 10, loss \$150.—W. K. Gunter, Gaffney, S. C., May 29, loss \$200, fully covered by insurance.—Dental laboratory of Dr. Moore, Lancaster, Wis., damage slight.—Dr. Healy's dental office, Willow City, N. D., was destroyed by fire June 9.

**THE FIRST PERMANENT MOLARS.**—The dentist is responsible in many cases for decay of the first permanent molars, because so little care is taken of the deciduous teeth that the parents get an idea that they are of little importance, and they are not able to differentiate between the first permanent molar and the deciduous molar.—L. S. LOURIE, *Dental Review*.

**TEETH PULLED; LOSES SPEECH.**—Mrs. Edward Strouse of Flora, Ind., has lost her speech from the effects of cocain which a dentist used in pulling her teeth. Mrs. Strouse is about 40 years of age and the strange outcome of her visit to the dentist's office is the chief subject of discussion in the town. So much excitement has been caused by her experience that people having dates for work are canceling them.

**DENTISTS TO WORK ON CONVICTS.**—The government has issued an order to the warden of the federal penitentiary at Leavenworth, Kan., stating that the condition of the teeth of the prisoners must be looked after in the future, as the department of justice is determined to see that every convict is kept in a healthy condition. The warden is in receipt of an order to have \$52 worth of dental work done on one man's teeth.

**METHOD OF MAKING GOLD BACKINGS.**—In regard to the method of making gold backings in two pieces and allowing a space between and filling the space with solder, I have found a very difficult and unreliable procedure. An easier and more satisfactory method, I believe, is to swage backings one over the other and solder them together, making as many as the thickness requires.—E. M. S. FERNANDEZ, *Dental Review*.

**ARMY DENTISTS WISH RECOGNITION.**—The position of the army dentists who complain of their lack of official rank in the army was discussed at the final session of the Washington State Dental Society and a committee of four was appointed to confer with the congressmen from the state in order to procure some satisfactory legislation at Washington upon the subject. Although the navy has no dentists, yet in view of the fact that

there may soon be legislation to remedy the deficiency, it was resolved to include naval dentists in any recommendations made by the committee. The committee is composed of C. S. Irwin of Vancouver, C. A. Holmes of Seattle, H. J. Carlyon of Olympia, and J. W. Cloes of Tacoma.

**BURNISHING GOLD BACKING.**—When burnishing a piece of gold plate to a lingual or other aspect of a tooth a good practice is to place a piece of silk ribbon over the gold and carry said ribbon around the tooth so as to have both ends meet on the opposite side and hold them firmly with fingers, thereby holding the gold plate in place. Under this silk you can burnish the gold with very little trouble.—E. M. S. FERNANDEZ, *Dental Review*.

**CHLOROFORM WATER AS A HEMOSTATIC.**—This is used by Spaak (*Journ. de Med.*, September 16, 1906), who finds it superior to all other styptics. It acts with marvelous rapidity, has not the slightest disagreeable taste or odor, is not escharotic, is easily obtainable, and can be made as required. It is not unpleasant when applied, and does not interfere with the surgeon in his operations. Saaps recommends a two per cent simple solution in water.—*Medical Times*.

**GENERAL MOUTH WASH.**—The following prescription will be found useful as a mouth wash, especially in the treatment of pyorrhea alveolaris:

R Potassii chloratis .....	3ij
Glyceriti boroglycerini .....	f 3j
Alcoholis .....	f 3ij
Aquæ cinnamomi, q. s. ad.....	f. 3viii M

Sig. Use as directed.

J. P. BUCKLEY, D.D.S.

**DIVORCES.**—June 20, Dot B. Sands, a dentist, was granted a divorce from her husband, John B. Sands, a physician of Los Angeles, Cal.—In June Mrs. Pearl Will was granted a divorce from James C. Will, a dentist of La Grange, Ind.—June 13, Mrs. Blanche Givan brought suit for divorce from her husband, John F. Givan, a dentist of Toledo, O.—June 17, Mrs. Eva Holcomb filed a suit for divorce from her husband, Augustus H. Holcomb, a dentist of Seattle, Wash.

**MAKING THE MATRIX.**—Cut a piece of platinum somewhat larger than the cavity, press it down in the center with a pledget of wet cotton, carrying the platinum to the very bottom. Mallet on this wet cotton with an automatic mallet, using a piece of orange wood cut in the shape of a blunt wedge for a plunger. This carries the matrix to the bottom and the margins, with less liability of tearing than any other method I have tried.—T. P. HINMAN, *Dentist's Magazine*.

**UNIVERSITY OF MICHIGAN NEW DENTAL BUILDING.**—For the first time in the thirty-two years of its existence the Dental School of the University is to have quarters adequate for its purpose. Since the establishment of the school in 1875 it has occupied successively three old buildings formerly used for other purposes. At the May meeting of the Board of Regents of the University, however, the plans for a new building by a firm of

Detroit architects were accepted. The exact site for the new building has not been settled upon, but doubtless it will be somewhere in the neighborhood of its present location. Professor W. D. Miller, the new dean, comes from Berlin, Germany, to take charge next fall.

**ANOTHER USE FOR CARBORUNDUM POWDER.**—When carborundum wheels, disks, etc., become clogged with amalgam or worn too smooth to cut, they can be speedily restored to usefulness by dipping in water or glycerin and then in carbo-powder, using them, repeating the process, same as using copper-carbo disks. Disks of all kinds will cut much faster with the powder than new ones will without it. Try it.—I. J. RAPP, *Dental Summary*.

**MUST CUT OFF THEIR WHISKERS.**—Representative Woodruff of the Wyandotte (Mich.) district announces that he is going to make one more effort this session and then he will be satisfied. He has resurrected and reintroduced a bill to compel doctors and dentists to go without whiskers. He says that after a careful study he is convinced that microbes lurk in all whiskers. Consequently whiskers spread contagious diseases. He is hopeful of getting the bill through both houses.

**CAUSE OF THE DEATH OF MANY PULPS.**—With individuals of a low degree of *vis vite* (life force), therefore of poor recuperative power, nature is absolutely unable to protect herself from thermal pulp shock by throwing out or precipitating secondary deposit of dentin. This, the writer believes, accounts for so many sudden inflammatory attacks and death of pulps soon after fillings have been inserted and crowns adjusted to teeth containing vital pulps.—G. W. COCHRAN, *Dental Practice*.

**DENTAL INSTRUMENTS INCLUDED IN SURGICAL EQUIPMENT OF RUSSIAN WAR SHIPS.**—It is an item of special interest to note that in the "Report on the Russian Medical and Sanitary Features of the Russo-Jap War," by Surgeon Raymond Spear, U. S. N., it appears (see p. 77) that according to his observations in Manchuria, the instruments supplied to the Russian ships included in his report consisted of a general operating case and a dental case. No special eye, ear, throat or nose instrument cases were allowed. With the instruments on board, however, almost any ordinary operation could be performed. This report was upon Russian ships in the harbor at Vladivostok that saw service during the war.—*Brit. Dent. Jour.*

**PREPARING SENSITIVE CAVITIES.**—Absolute dryness is an essential thing in cavity preparation. In this connection let me recall the histological structure of the teeth so far as the tubuli are concerned; you will remember that the tubuli emanate from the pulp-chamber and go out towards the enamel of the tooth, and that any agent applied to a cavity will go in the direction of the tubuli first; it will not spread laterally very far, and in excavating the dentin we cut beyond the tubuli that are actually exposed; in other words, the remedy does not get actually to the sensitive part except that portion lying in the floor of the cavity or that which is directly affected by the carious process; therefore it is here that dry-

ness helps us a great deal. And I believe that in operating under absolute dryness, using warm air, not only for the purpose of warming the tooth, but for the great purpose of abstracting moisture, we may greatly lessen the amount of pain produced.—E. MAWHINNEY, *The Bur*.

**DENTISTS WILL USE HOSPITAL.**—Dentists of Elyria, O., have concluded to wait on the new hospital board and request them to set aside a room properly equipped for operations when gas or chloroform is necessary. They believe they have as much reason for their request as the surgeon does for any delicate operations that come to him. They also believe that it would be more economical for the patient and at the same time give a better service and the confidence of the hospital would avert a great many accidents.

**DON'T LET YOUR PAST SPOIL YOUR FUTURE.**—There is nothing more depressing than dwelling upon lost opportunities or a misspent life. Whatever your past has been, forget it. Do not drag it across the New Year line. If it throws a shadow upon the present, or causes melancholy or despondency, there is nothing in it which helps you; there is not a single reason why you should retain it in your memory, and there are a thousand reasons why you should bury it so deeply that it can never be resurrected.—*Western Dent. Jour.*

**DAMAGES.**—A dentist of Chicago, Ill., is being sued by a woman of that city, her charge being that a front tooth was broken during the process of operation, causing her mortification to that extent.—An Ohio man was given a judgment for \$1,000 against a dentist who pulled the wrong tooth.—A dental company of Battle Creek, Mich., has been made defendant in a suit for \$5,000 for alleged careless treatment.—A dentist of Brooklyn, N. Y., is held in \$600 bail in court for annoying a woman, her claim being that he persisted in seeing her, to the point of forcing her front door.—A "painless" dental company of Hamilton, Ont., was sued for \$200 damages, the plaintiff alleging the company did not live up to its advertisement. The case resulted in a verdict in plaintiff's favor for \$65.

**ROBBERIES.**—Dr. G. E. Whitemore, Little Rock, Ark., May 24, several hundred dollars' worth of gold.—Drs. Sinton & Flora, Colorado Springs, Colo., June 15, \$50 worth of gold fillings, crowns and bridges.—Hanson & Urban, Paxton, Ill., May 24, a considerable amount of gold.—L. F. Pooler, Evanston, Ill., June 13, instruments and gold fillings valued at \$90.—F. W. Keel, Monticello, Ill., May 28, gold leaf, crowns, etc., valued at from \$85 to \$100.—J. H. Besore & Son, Ida Grove, Ia., June 15, \$75 worth of gold.—M. W. Warner, Parkersburg, Ia., \$20 worth of gold.—J. G. Herron, Creston, Ia., June 23, gold fillings, bridges, solder and fillings valued at \$100.—Louisville Dental College, Louisville, Ky., June 13, \$20 in cash, purse containing valuable papers, a pair of gold-rimmed glasses and several articles of minor value.—Stanley Towle, Fall River, Mass., June, gold and platinum valued at \$50.—J. K. Douglass, Sandusky, O., June 11, articles valued at about \$25.—P. H. Derby, Springfield, Mass., \$10 worth

of gold.—J. F. Alexander, Seattle, Wash., June 4, loss about \$100.—Dr. Van Buskirk, Olympia, Wash., May 27, gold valued at \$50.—D. Daniels, Galveston, Tex., June 20, valuables amounting to \$60.—Drs. Porter, Chastian and Cole of Chanute, Kan., early in June, gold and dental tools amounting to \$60.

WORSHIP OF TEETH.—Teeth have been worshiped and, in fact, are venerated as relics in some religious shrines. Buddha's tooth is preserved in an Indian temple. The Cingalese worship the tooth of a monkey, while an elephant's and a shark's tooth serve a similar purpose among the Malabar islanders and the Tonga islanders, respectively. The Siamese were formerly the possessors of the tooth of a sacred monkey which they valued highly. In a war with the Portuguese they lost the holy grinder along with much gold and precious stones.

STERILIZATION OF ENGINE HANDPIECES.—Dr. Viggo Andresen of Copenhagen, Denmark, recommends for the sterilizing of engine handpieces and other instruments the heating of them in paraffin oil to a temperature sufficient to destroy the bacterial vitality in connection therewith. Dr. Andresen states that steel instruments, as well as vulcanized attachments thereto, can stand heating up to 150° C. without unpleasant results. The method suggested has the advantage of causing no injury to the surface of the steel by oxidation or corrosion, as when water or aqueous solutions of various antiseptic agents are employed for this purpose.—*Dental Cosmos*.

A WORD OF WARNING IN DESENSITIZING DENTIN.—To those who are in the habit of obtunding sensitive dentin by pressure anesthesia I wish to give a word of warning. This is a dangerous procedure, not only because cocaine is a protoplasmic poison, but because of the very fact that the cavity has not been excavated, the agent is forced through infected tissue, and you are carrying the products of that infection into the pulp, which cannot, by any line of reasoning that I can figure out, be anything but deleterious to the pulp tissue. It is undoubtedly true that many pulps die, even years afterwards, as the result of the injudicious use of pressure anesthesia.—E. MAWHINNEY, *The Bur*.

DENTAL LAW IN PHILIPPINES.—It might be of interest to know that since the American occupation of the Philippines a dental law was passed by the commission, due largely to the efforts of Dr. R. T. Oliver, supervising dental surgeon, United States Army, who had charge of the corps in the islands. The law requires the appointment of three reputable practitioners of dental surgery, who shall be graduates in good standing of legally incorporated dental educational institutions recognized by the National Association of Dental Examiners of the United States of America. The members receive as compensation \$2.50 for each candidate examined, the secretary-treasurer receiving \$150 per year. Applicants must have a diploma as either a D.M.D. or D.D.S. from a legally incorporated dental institution. The persons exempted from this law are those who have passed successful examinations before the provost-marshal-general, city of Manila, pursuant to authority from the military governor of the



Philippine Islands, dated August 2, 1899, and dental surgeons of the United States Army. So you can see, by the action of the military governor, that when the first expedition was sent to the islands the necessity of protecting the soldiers from empirical practitioners and quacks was recognized.—S. D. BOAK, *Dental Summary*.

**FAILURES ARE VALUABLE.**—Failures, in my opinion, are responsible for many successes in life, for nobody ever achieved the highest ideal without failing sometimes. Failures should be made forerunners of success. Each failure should teach the avoidance of that particular danger in the future, for when everything goes along smoothly and you seem on the high road to success, that is the most dangerous time. When humbled by the lessons of disappointment we are in better spirit to win success. To the energetic and ambitious practitioner adversity will prove to be only a temporary delay, for it will make him the more determined to attain a higher degree of accomplishment along the particular lines of failure.—F. E. LOGAN, *Dental Register*.

**COLLEGE COMMENCEMENTS.**—Birmingham Dental College, May 3, 10 graduates; Colorado College Dental Surgery, May 14, 14 graduates; Southern Dental College, April 26, 40 graduates; Indiana Dental College, May 10, 50 graduates; Louisville College of Dentistry, May 7, 60 graduates; New Orleans College of Dentistry, May 14, 29 graduates; Baltimore College of Dental Surgery, May 4, 41 graduates; Western Dental College, May 8, 41 graduates; Kansas City Dental College, May 9, 15 graduates; St. Louis Dental College, May 10, 37 graduates; Lincoln Dental College, May 16, 8 graduates; Cincinnati College of Dental Surgery, May 2, 8 graduates; Ohio College of Dental Surgery, May 9, 54 graduates; Dental Department, University of Tennessee, May 1, 4 graduates; Dental Department, Vanderbilt University, May 4, 42 graduates; Dental Department, Marquette University, May 10, 11 graduates; Royal College of Dental Surgeons, April 26, 23 graduates; University of Southern California, May 28, 22 graduates.

**TROUBLES OF VARIOUS DENTISTS.**—A dentist of San Francisco was stabbed in the back, the blade passing through the lung, by a Japanese, May 27. Physicians at the hospital to which he was taken say he cannot recover.—A dentist of Alton, Ill., was given a cowhiding by a woman who has a damage suit pending against him for stealing a kiss, June 18.—Four dentists of Newark, N. J., were victimized out of small sums of money, June 21, by a young man claiming to be a dental student and to have a wife and four small children in destitute circumstances.—A dentist of Buffalo, June 18, sued a woman on a bill for work done for her daughter. The defense was that the father should pay the bill. Decision was reserved.—A dentist of St. Louis, charged with passing silver counterfeit dollars, was surrendered by his bondsman to the United States marshal, May 18. His friends are seeking to procure another bondsman.—A dentist of San Francisco mysteriously disappeared from his home May 30, since which time no trace of him has been discovered.—A dentist of Nevada, Mo., has been cleared of the charge of murder under which he was awaiting trial,



the plea of self-defense being generally accepted.—A dentist of Kansas City was tried for abusing and assaulting his boarding mistress when trying to collect for board. He claimed he merely tried to convince her that he did not owe her anything. The justice took the case under advisement.—June 16 a dentist of Newcastle, Pa., was taken critically ill from blood poisoning, resulting from the extraction of a tooth three weeks previous.

**OXYGENATED TOOTH POWDER.**—A writer in the *Pharmaceutical Journal* describes what is likely to be the effect of adding peroxides to tooth powders. Calcium, magnesium and sodium peroxides are decomposed by water, oxygen being liberated and alkalies formed. The effect of the oxygen may be disregarded, but the presence of even 5 per cent of caustic alkali in the powder may be not inconsiderable. If calcium peroxide be used, caustic lime, more or less slaked, will be applied to the teeth and gums, while sodium peroxide will yield caustic soda, and magnesium peroxide will be converted into ordinary magnesia. Of the three, he should prefer to use the last mentioned, though the other two would be more active, and their use might be preferable on that account.—*Brit. Dent. Jour.*

**GOLD THE STRONGEST FILLING MATERIAL.**—A tooth which is easily broken or which has thin walls susceptible to fracture is the tooth of all others which requires the strongest possible filling material to protect it. Gold is admittedly the strongest filling material we possess, and if it is indicated anywhere it is indicated in these so-called soft teeth. Lest there be a misconception in regard to a certain impression among members of the profession that gold cannot be safely adapted to the walls of cavities in these teeth, let it be said that tooth tissue unless abnormally softened is sufficiently hard to admit of perfect adaptation of gold without the slightest injury to the cavity margins provided the margins are correctly formed and the gold properly manipulated.—C. N. JOHNSON, *Dental Review*.

**THE CEMENT OF INLAYS: PERMANENCE DEPENDENT UPON MINIMUM THICKNESS.**—When an inlayed filling is made to perfectly fit a cavity (which is quite possible) and is properly cemented to place, the cavity is so sealed that a leaky condition such as occurs about an ordinary metal filling is impossible. The permanence of a cement line about an inlay is dependent to a great extent on its minimum thickness, both for strength of adhesion and diminished tendency to wear away. Comparing this cement joint to the wood-joiner's glue joint, the minimum amount gives the maximum strength, and it must be remembered, too, that cement is much stronger than glue. The closer the inlay fits against the walls and margins of a cavity, the less cement is exposed, and in consequence there is less to wear and wash away. The way that cement wears (cupping out) when used alone as a filling, allows of certain comparisons. It has been my observation that cement wears out, from the margin of an inlay, only as deep as the margin is wide, and no deeper. I consider this, if correct, a very important fact in inlay work. So I repeat, if any inlay is made to come in close contact with cavity walls and margins, there is practically no cement to waste away, and if it does wear it is only to a depth as great as the margin is wide. This explains

to me one of the principal reasons why inlayed fillings are less subject to recurrent caries.—S. J. KNOWLES, *Dental Review*.

FATALITIES.—A young dentist of Newberry, S. C., is being held for the death of a woman to whom he administered an anesthetic while extracting teeth. It is claimed he was not a licensed dentist and did not know the composition of the drug.—A woman of Elyria, O., died while under the influence of chloroform in the office of a dentist to whom she had gone to have fifteen teeth extracted.—May 30, a young woman died at Fort Collins, Colo., of heart failure. She had been suffering for some time from a wisdom tooth coming through her cheek. The tooth was removed, cocaine being used. A few days later she collapsed and grew steadily worse until the end.—Hemorrhage of the gums caused by the extraction of two teeth resulted in the death of a young man of Loma Vista, Cal., May 29.

A METHOD OF USING DIATORIC TEETH IN PLATE-WORK.—Thinking that some dentists, on account of the high price of platinum pin teeth, may find it advantageous to use diatoric teeth, I will explain my method of using them to make a finished case with the teeth as firmly attached as they possibly can be, and one that has stood the test. I have been using the Ash & Sons' diatoric teeth, as they have small holes running through the body of the teeth, which I utilize as follows: Take about 24-gauge iridium wire, pass it through the hole in the tooth, and with stub pliers give it one twist, and cut off with shears some distance from the twist. Then, with pliers, bend each bend of wire forward toward the body of the tooth, forming a small loop of each end. Teeth are then ready to set up, the wire loops taking the place of pins. When these teeth are used in this manner you have a piece of work of which you need have no fear of the pins pulling from the plate, and one that can be finished as artistically as any vulcanite denture.—C. W. MYER, *Dental Summary*.

GRATEFULNESS.—When I know that all that I have and am has cost midnight oil and much sacrifice and self-denial on the part of hundreds now living as well as those dead, I must indeed be ungrateful if I am unwilling to aid with the best that in me lies, even if that be in ever so humble a way, the onward march of progress of my profession. Indeed I am not worthy to be called a professional man and should be classed with leeches and bloodsuckers of society, unless I possess this helpful spirit.

The most expensive things in the world are the things you get for nothing. Socrates said, "Fame is the perfume of heroic deeds." Someone else said, "An ounce of performance is worth a pound of preaching," but he who influences the thought of his time influences the thought of all time. We all have a part to play in this game we call life. "No man can hear music for you; no one can love a child or a country or a June day for you, and thus no one can take your place in this gallery where hang the pictures of the living and dead and where all eloquence speaks."

It is a fine thing to be a professional gentleman, but a finer thing is to be a man. Let us gird ourselves with the spirit of helpfulness and

resolve to do our best for the good of our society and the uplifting of our profession.—E. MAWHINNEY, *Dental Review*.

ONE RESULT OF LYING.—Maarten Maartens, the Dutch novelist, was talking at a magazine office about realist fiction. "If realism is truth," he said, "then I am for it. In books, as in life, the truth is always best. Lies fail. Lies fail in books as they fail in life. I know a woman who intensely desired to have a good photograph taken of her little son. But in the studio the child bawled as though he were going to be tortured. It was impossible to calm him, impossible to keep him in the chair. For an hour he filled the place with his howls and yells. For an hour he tore up and down the room like an imp. 'But, darling,' said the mother, 'the gentleman isn't going to hurt you. Just smile and keep still a moment and it will be all over before you know it.' 'Yes,' roared the youngster. 'Yes, I know. That's what you told me at the dentist's.'"

CARBORUNDUM POINTS IN CAVITY PREPARATION.—Not much has been said this afternoon in regard to instrumentation. I ran across a little thing not long ago which may be old to you, I do not know, but to myself it was not. In the preparation of cavities, where we have to do extensive cutting, a bur is not ordinarily satisfactory, and you know that a great many of the abrasive stones on the market are very frail, and we do not give them many revolutions in the cavity until the stone is worn out or runs off the mandrel. Instead, I take carborundum points, Nos. 2, 3 and 17, the 2 being a cone, the 3 a barrel, and 17 a round carborundum point, put in a mandrel or in a lathe and dress them down by revolving them upon a coarse file. Those numbers are too large as we get them, but by dressing them down with a file we have a stone of convenient size, that cuts rapidly, does not run off the mandrel, and which can be made any desired shape. Since I made use of those stones I have been able to do my work more rapidly and with more satisfactory results than ever before.—L. S. TENNEY, *The Bur*.

INSTANTANEOUS RELIEF IN CASES OF BLIND ABSCESS.—Instantaneous, and often permanent relief from pain following infection from a pulpless tooth may be obtained by the use of equal parts absolute alcohol and water. Whether the pain is caused by an upper or lower tooth the treatment is equally effective. The preparation can best be used with what is known as a watch case atomizer. Fill the atomizer with the solution, then, having the patient recline the head a little, place the nozzle of the atomizer into the nostril on the side where the trouble is, spray the solution back into the nostril twice and the pain will be relieved immediately. In some cases there will be a slight amount of gagging and the solution will come out through the mouth, but this discomfort is only temporary. If the pain should return within fifteen minutes a stronger solution, say 75 per cent alcohol and 25 per cent water, may be used and the treatment repeated, but usually the 50 per cent solution will be sufficient and will permit you to open up the tooth and give the patient relief. The watch case atomizers may be obtained from almost any large drug house. If you cannot get one,

use any atomizer that will force a spray far back into the nose.—J. E. KEEFE, *Items of Interest*.

**FREE DENTAL SERVICE.**—Free dentistry has just been set up in the public schools of Freiburg, Germany. The operations are thus described in a consular report: The dentist at the head of this school clinic examines all the children in the city both in their homes and in the public schools. A report on such examinations is sent to the parents, who are asked to send their children to the school dental clinic for free treatment. Those children having ten or more poor teeth are first treated, an exception being made in the higher classes, where those with only slight defects are to be treated, so that they will leave the public schools with sound teeth. After these worst cases have been attended to, all other children with defective teeth are to be treated, the younger ones being given preference. The treatment of the teeth includes extraction, filling, crowning, etc.

**VALUE OF SIX TEETH UP TO SUPREME COURT.**—The problem of whether the last six teeth of a 58-year-old woman are worth \$30 or \$1,000 is engaging the attention of three judges of the appellate term of the Supreme Court. Mrs. Thera Taylor, a widow, places a valuation of \$2,000 on her six missing molars, and a jury has placed their worth at \$1,000, but the New York City Railway contends that the verdict should be reduced to \$30, or \$5 a tooth. Mrs. Taylor was riding on an open Columbus Avenue car when an altercation between the driver and the motorman of another line over the right of way resulted in a collision. Mrs. Taylor was thrown forward, her mouth striking the back of the seat in front with such force that a plate holding eight teeth was split and her six remaining natural teeth were knocked out. Dentists testified that she would never again be able to eat meat.

**MANIPULATING AMALGAM FOR FILLING.**—If you work the alloy and mercury thoroughly you will be able to remove much more mercury than you will if you only work it a little. Of course, you will also by thorough working remove a greater amount of the alloy which has gone into solution in the mercury, but this will not change shrinkage into expansion nor expansion into shrinkage. Analyses show that the alloy that has been removed in the excess of mercury is not in quite the same proportions that it was in the alloy that we began making the filling of. The mercury has carried out an excess of tin, leaving the filling with less tin in it than we expected. The effect of removing this tin is to strengthen the alloy. Great excesses of mercury do very little harm if removed before you have worked the alloy. Simply pouring mercury into the alloy does little harm.—M. L. WARD, *Dental Review*.

**USE OF COPPER PHOSPHATE CEMENT.**—The copper phosphate is an excellent cement. I have found it very useful in deciduous teeth, broken down permanent molars and the posterior surfaces of the lower anterior teeth. Sometimes when a patient has been wearing a partial lower denture for a number of years you will find cavities developed in the posterior

surfaces mentioned, and it presents a problem as to how one can preserve these teeth for a longer period of usefulness. Copper phosphate does admirable work here. Another place where I have used it to advantage is in recession of the gums around molars, where an opening shows between the roots and food packs in and keeps things foul. In these cases I use the copper cement, drying between the roots as well as possible and then filling full of cement. It gives great satisfaction in such a case.—H. G. CHAPPELL, *Pac. Gazette*.

**DENTAL STUDENTS WILL BE LIMITED.**—Limited accommodations at the University of Minnesota are being met in a summary manner in some of the departments. Only a certain number of students will hereafter be allowed to register. In the Dental Department the situation has reached a climax. Official announcement has been made by the head of the department to the effect that only seventy-five of the present class of freshmen will be allowed to register at the opening of college next fall for the second year's work. It was thought at first that the method of weeding out the students to the required number would be to drop those who had been conditioned in any way. This plan was not adopted, however, and the rule of "first come, first served," will be enforced. Many of the students are seriously considering the matter of leaving the university and finishing their courses at another college.

**THREE USEFUL POINTERS.**—To take vulcanized rubber from teeth taken off plates. Place teeth in a small, wide-mouthed bottle containing chloroform, over night. The rubber may be removed as easily as so much charred cork.

To keep hypodermic needle always ready for use. After using, unscrew the needle from the syringe, and blow out any liquid that may be in it. Place a drop or two of alcohol in the large end, and force it through with breath pressure. Use no wire, and do not connect the needle with the syringe until wanted. When so treated, the needle will not clog.

Handy and tough broaches may be made by filing fine piano wire to proper size. Taper by leaving the broach four-cornered. Such a broach may be used for reaming out the smallest nerve-canal without danger of breaking the broach. Different sizes may always be kept on hand. For posterior canals where the holder cannot be used, a knob may be put on the end with a little soft solder, using zinc chlorid. This is convenient in rotating between finger and thumb to enlarge canals. Piano wire may be obtained from any piano tuner.—J. WYCLIFFE MARSHALL, *Dental Cosmos*.

**GOLD DEMANDS A HIGH ORDER OF SKILL.**—The fact is that gold to do good service demands the most exacting attention to details in its manipulation, and a high order of skill on the part of the operator. It will not tolerate faulty management, and its exactions are so great that in certain classes of cavities and in some patients it is well nigh impossible to get perfect results. It is in these cases where inlays offer us a most useful substitute, because in the practice of dentistry we are no longer justified in subjecting our patients or ourselves to the nervous strain necessary for the proper insertion of gold fillings in these difficult situations. But

where gold can be conveniently and comfortably inserted, and with the technique conscientiously carried out there is no more certain method of saving teeth by filling that has ever yet been devised.—C. N. JOHNSON, *Dental Review*.

**MEDIUM SETTING AMALGAM PREFERABLE.**—In my practice I do not care for theories; it is results that are desired, and my experience has caused me to eliminate quick-setting amalgams from my practice for two reasons: In my hands a medium-setting amalgam has always given good results, and twenty years' experience with the same amalgam has demonstrated to me that where the cavity preparation was correct and the manipulation of the amalgam such as it should be the result was a filling that stood for years without any perceptible change except in color. This result was never accomplished with a quick-setting alloy, that is, in my hands; my theory was that the quick setting required such an excess of mercury as to render its use impracticable, and my belief still is that a slow-setting amalgam, with 10 per cent less silver, also 25 per cent less mercury, is a hundred-fold better amalgam than a quick setting.—J. P. Root, *Western Dent. Jour.*

**AN INTERESTING LAWSUIT.**—Five thousand dollars is the price demanded of the state of Ohio by Lincoln Wrenn for being deprived of the use of a set of false teeth. He never had the teeth, but has felt the need of them very sorely, and since the state locked him up because he signed another man's name to a check and thus deprived him of the opportunity to provide himself with molars with which to assimilate the hard prison fare, he holds that he is entitled to payment. Here is his itemized bill of damages:

To loss of facial beauty .....	\$1,000
To anguish of mind, due to ridicule.....	1,000
To loss of digestion, due to liquid diet.....	2,000
To physical suffering .....	980
Cost of needed teeth .....	20

Wrenn had just had his old teeth removed and was waiting for his gums to heal when he got into trouble with the state. Now, he says, it is doubtful if he ever can procure teeth that will restore a normal appearance to his face and he insists that his digestion is permanently ruined.

**MARRIAGES.**—Percy R. Ashplant, a dentist of Newburg, N. Y., was married to Miss Olive Langridge of Newburg, June 5, 1907.—A. L. Brillhart, a dentist of Tecumseh, Neb., was married to Miss Evelyn Dale of Centerville, Ia., May 22, 1907.—James Macklin Compton, a dentist of Galveston, Tex., was married to Miss Maud Evelyn McKesson of Los Angeles, Cal., June 2, 1907.—Ralph M. Danforth, a dentist of Lynn, Mass., was married to Miss Rosa Veach of Littleton, N. C., May 30, 1907.—E. C. Johnson, a dentist of Iron River, Wis., was married to Miss Jennie Esther Anderson of Lake Netagamon, June 4, 1907.—Paul P. Luckie, a dentist of Le Mars, Ia., was married to Miss Augusta Kohler of the same place, June 11, 1907.—O. W. Langston, a dentist of Indianapolis, Ind., was married to Miss Paulne Benson of Philadelphia, June 26, 1907.—W. G. McNally, a dentist of Richmond, Va., was married to Miss Lily

Douglas of Atlanta, Ga., June 1, 1907.—Lorenzen P. Ronne, a dentist of Syracuse, Neb., was married to Miss Mildred O. Pratt of the same place, June 11, 1907.—Ernest S. Story, a dentist of Pennsylvania was married to Miss Ellener M. Adams of Salem, Mass., June 10, 1907.—O. L. Smith, a dentist of Fort Collins, Colo., was married to Miss Eda Lawson of the same place, June 20, 1907.—Sherman Y. Taylor, a dentist of Chicago, was married to Miss Lena Rohkam of Elgin, Ill., June 1, 1907.—Harry Oscar Burgett, a dentist of Martinsville, Ind., was married to Miss Barbara Einney of the same place, May 29, 1907.—Philip Charles Regan, a dentist of Waukegan, Ill., was married to Miss Gertrude Gorman of Chicago, June 18, 1907.—George S. B. Leonard, a dentist of Mystic, Conn., was married to Miss May Reed of New York City, June 15, 1907.—John M. Beshoar, a dentist of Trinidad, Colo., was married to Miss Hazel Oxley of Raton, N. M., June 6, 1907.—H. P. Emeis, a dentist of Logan City, Utah, was married to Miss Rietla Morrison of the same place, June 8, 1907.—Cyril D. Duclos, a dentist of Lenox, Vt., was married to Miss Katherine A. Morgan of Adams, Mass., June 11, 1907.—William Roscoe Muse, a dentist of Richmond, Va., was married to Miss Annie Wilton Dickerson of the same city, June 11, 1906; the wedding had been kept secret for a year and was announced June 15, 1907.—Abraham Eratt, a dental student at the University of Baltimore, was married to Anne P. Copelan, a dentist of Baltimore, June 7, 1907. Dr. Copelan's marriage created considerable interest from the fact that Mr. Eratt took the name of his bride in defiance of the usual custom, the change of name to be legalized by the courts. Dr. Copelan's reason for retaining her maiden name was due to her ambition in her profession and to the fact that she did not wish to lose any of her large practice by a change of name. Her husband will graduate next year and will make the third Dr. Copelan practicing in Baltimore.

EXAMINING BOARD AFFAIRS.—Governor Pindall of Arkansas recently appointed members of the State Dental Board as follows: Charles Richardson, Fayetteville; C. C. Sims, Dardanelle; C. G. Farrow, Little Rock; Charles Burgstrasser, Eureka Springs, and A. T. McMillan, Little Rock. The appointees will serve for two years.—Twenty-three students were admitted to practice as dentists by the State Board of Dental Examiners of California, June 21.—The State Board of Dental Examiners of Colorado was recently organized in Denver by the election of F. H. Sutherland of Denver as president; Mallory Catlett, treasurer; H. D. Chinn, secretary.—Charles Bellchambers of Effingham has been appointed to the board of censors of the Illinois State Dental Society.—J. Richard Wallace of Louisville, Ky., has been reappointed as a member of the State Board of Examiners.—At the May meeting of the Louisiana Board 39 out of 45 applicants were successful in passing the examination.—The Michigan senate recently passed the new dental bill, increasing the members of the board to five, but struck out that section which provided that graduates of the university and other dental colleges in the state would not have to take the required



examination. Many dentists wanted this section left in, but the present members of the board did not, as \$20 is charged for each certificate, and they wanted some means of accumulating a fund to draw on for the prosecution of quacks.—May 24 the State Board of Dental Examiners, in session at Jefferson City, Mo., adopted a resolution revoking all licenses issued to dentists to practice in the state who have not paid their annual renewal license fee of \$1, due for the past two years or more. This action took effect July 1, and it was stated that about 500 dentists are delinquent in payment of this fee.—Dr. Starling, president of the State Dental Board of North Dakota, has been served with papers in a mandamus proceeding which calls upon the board to appear in the district court and show why the board failed to recognize Frank W. Chandler of Valley City as a member when it met in January. Dr. Chandler was appointed a member of the board by the governor, who understood that Dr. Ramsey, a member, had removed from the state. The latter was retained by the other members, and this action was indorsed by the association, which also voted not to receive either Dr. Chandler or his partner, Dr. Cole, because of their alleged violation of the ethics of the profession in advertisements and for other professional reasons, though nothing was charged against either on personal grounds. At the June meeting of the Oregon Board 40 out of 44 applicants were successful in passing the examination. The board organized for the year by electing: President, E. A. Vaughn, Pendleton; Secretary, H. H. Olinger, Salem. These together with Jack Yates of Portland and Mark Hayter of Dallas, newly appointed members, and Louis Bundy of Medford constitute the members of the board.—The governor of South Dakota has appointed G. W. Collins of Vermilion for a six-year term, and J. G. McCartney of Mitchell to the same board to fill the vacancy caused by the revoking of the certificate of Larson.—June 14 the Virginia Board elected the following officers: President, H. W. Campbell, Suffolk; Secretary and Treasurer, R. H. Walker, Norfolk; Assistant Secretary, J. P. Stiff, Fredericksburg.—June 4 the State Supreme Court of Washington unanimously decided the suits of dentists Edwin J. Brown and H. C. Littooy against the State, State Dental Board and previous Dental Examining Board, the decision being for the defendants. Brown and Littooy have been contending for years that the State Dental Board and other dentists have conspired to deny them dental licenses and have asserted that a chief reason for this was that they are heavy advertisers, which is considered unethical by the Dental Board. Both Brown and Littooy were arrested for practicing without license and were convicted. The Supreme Court decides for the defense on the grounds that the suit is to review and annul a criminal conviction to compel the State Board to issue a license, and to recover damages against the State Board and other dentists, in all three separate and distinct causes of action, to each of which all of the defendants are naturally not parties.—Twenty-one out of 42 applicants to practice dentistry in the State of Washington were successful in the May examinations.—Charles Seeger of Manitowoc, Wis., has been reappointed a member of the State Board.